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OTOLOGIC APPLICATIONS OF AUDIOLOGY

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Otology is a branch of medicine which deals with disorders of the ear. The major portion of the problems confronting the otologists is confined within the temporal bone. Audiology is a new specialty and is a highly derivative field of knowledge. It represents a synthesis of many other fields — physics, psychology, linguistics, acoustics and pedagogy, to mention a few—undertaken for a special purpose: to study and treat the class of problems that relates directly to the function of hearing. The term audiologist is restricted to those persons who have had extensive training, specialization and experience in dealing with hearing and hearing loss in individuals. Since the otologist also deals with hearing and hearing loss, both special fields have a common basic problem. Working together and pooling their respective views, these two specialties should increase the rate of advancement in problems of hearing and hearing impairment. For some reason there has been a delay in the proper coordination of these two special fields.

One reason may be that audiology originated in the college and not the medical schools. When audiology was still in its embryonic stage, the most fruitful source of audiologists was the college speech clinic, now renamed the speech and hearing clinic. Patients were rehabilitated in these clinics, but the basic philosophy remained that of training and not treating.

Little attention was given to the pathology present, perhaps because that information was not readily available. Diagnostic comparisons between hearing loss and diseased states often were not accomplished. Audiologists emerging from such a background can see little need for close association with otology and do not have the opportunity of observing the audiologists and otologists working together.

The audiologist, however, is not entirely to blame for this improper recognition. The medical profession must accept the major portion of the blame for the delay in proper coordination of these two fields. Except for a few farsighted men such as Fowler, Goldstein and more recently Lederer, Canfield, Crows, and others, otologists as a whole failed to realize the diagnostic and therapeutic potentials of this hybrid specialty, audiology. Hearing loss was a medical or surgical problem. When routine treatment failed nothing more could be done. The number of teeth, tonsils and nasal septums removed for the treatment of otosclerosis is an excellent example of the medical approach to hearing loss. There are some otologists who consider the audiologist a technician whose job it is to carry out audiometric testing or consider audiology as a dumping ground for undesirable hard-of-hearing patients. Unfortunately, there are still physicians practicing otology who have no knolwedge of audiology.

Audiology is now at a stage of development where it functions best in close cooperation with the medical profession and this cooperation is what we are striving to achieve at Delaware Hospital. It is not sufficient to have peripheral relationship between audiology and the medical profession. Merely occasional contact between the two will not serve the hard-of-hearing patient as he needs to be served. The audiologist must be a full member of the team along with the roentgenologist, the neurologist, the rhinologist and the other specialists called upon to aid in the diagnosis of otologic problems. He should be a colleague on the diagnostic and therapeutic team and not a manipulator of admittedly[2] complex equipment. Fortunately, steps are being taken to educate both members of this potential team, although it is a slow process. The lead-

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ing audiologic training centers are providing increasing contacts for their students with the otologists. Courses of instruction in the anatomy, physiology of the ear, nose and throat are required of audiology students in many training centers and are provided in many medical schools and universities specifically for audiology students.

Conversely, the graduate training centers for otologists are including many phases of audiology in their curriculum and some centers require extensive practical experience in the audiology center as part of graduate training. Practicing otologists are given opportunity to visit and participate in seminars in audiologic clinics.

Newer and better audiology centers are being established in medical schools throughout the country. In many, such as Johns Hopkins, Pittsburgh, Illinois, to mention a few, the audiologic staff has faculty rank in the School of Medicine and gives lectures to graduate and undergraduate medical students. Heretofore, because of the poor geographic grouping of medical schools and universities, audiologic coverage has not been adequate. Establishment of an audiology center in a general hospital is a comparatively new departure but a good one. It brings necessary services to the hard-of-hearing who do not have access to large medical centers and provides the audiologist easy access to the services of other medical specialties.

Audiology now fills an important gap in the handling of the hard-of-hearing patient. We now have much-needed help not only in diagnosis but also in carrying our patients through the complete range of therapy. The concepts of healing the aurally handicapped individual has been broadened beyond medical and surgical bounds. Through close association between otology and audiology, our otologist is not limited in his therapy, our audiologist finds his true role in medicine, and, above all, our hard-of-hearing patient receives the maximum benefit which can be achieved.

There are very few centers of this type in general hospitals and they are widely scattered. We are very fortunate to have this hearing and speech center at the Delaware Hospital and it is due to the farsightedness and progressiveness of our Board of Trustees and our live, wide awake Director of the Hospital, Mr. R. R. Griffith. They have long felt the need of it and they went to a great deal of expense in its development.

We have one of the most remarkable sound-proof rooms in the country. It is a floating room, in other words, a room within a room and is about as sound-proof as it is humanly possible to make it. The Board of Trustees has spared no expense to furnish the necessary equipment. The State Board of Health has been most cooperative in the establishment and the support of the clinic.

The Board of Trustees succeeded in obtaining the services of an outstanding audiologist, Mr. L. LeRoy Horne, to head the center. We have been functioning now about nine months and each month shows a steady progress under his guidance.

Several months ago we sent out otological examination forms to the otologists and some of the internists and general practitioners, as well as the pediatricians. These forms look lengthy, but they really are not, but are the type you can answer with "yes" or "no" sign. If for any reason you find them cumbersome, you may ignore them and send the patient to the center anyhow and all of that part will be done there. We would like very much for each case referred to the center to be seen by an otologist, but that is not absolutely necessary.

THE CONSERVATION OF HEARING*

A Joint Project of the Otologist and the Audiologist

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Conservation of hearing programs are receiving increased attention throughout the country. In previous years these were centered in large teaching institutions. Since World War II when the armed services developed such centers for the rehabilitation of service incurred deafness, the desire to help the deafened has spread to the smaller communities. It has been a natural tendency not only to rehabilitate the deaf, but to prevent deafness wherever possible. This obviously must be undertaken early in childhood. Such a desire is now expressed in the Audiology Center at the Delaware Hospital.

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*Department of Otolaryngology, Delaware Hospital, Presented at Staff Meeting, November 13, 1951.

Conservation of hearing is a complex project and actually should not be the sole desire of the otologist or the audiologist. To be a successful undertaking it must have the wholehearted support of not only the entire medical profession but the community at large, as well. By receiving such support there would no longer be the attitude of pessimism which in former years so often met the hard of hearing.

The first requisite in a program of this sort is the detection of the potentially deaf. It is obvious that the otologist or audiologist cannot do this without help. The testing of hearing of school children in Delaware has been the main source from which cases have been found. However, it is imperative that all of the medical profession must be aware of methods by which they can help. In order to better understand the problem, the causes of deafness should be outlined.

The types of deafness can be classified under two headings, namely: congenital, and acquired.

Congenital deafness includes otosclerosis and predisposition to eighth nerve degeneration, as well as anatomical malformations. Otic malformations may vary from a slight defect to complete absence of the external as well as the internal ear. Prenatal toxic causes also leave their mark in embryonal development: for example, virus diseases such as German measles in the first trimester of pregnancy. Statistics show that 33 to 50 per cent of such cases result in a congenital deafness. To a lesser extent, prenatal development of mumps and influenza result in similar defects.

There are four broad groups of causes of acquired deafness, namely:

1. Diseases of the central nervous system —meningitis, encephalitis, brain tumors, circulatory diseases, concussion of the central auditory area, and fracture of the temporal bone.

2. General infectious diseases — scarlet fever, measles, mumps, pertussis, etc., which cause nerve degeneration by high fever. Fig. 1 illustrates the effect of high fever in infancy. This child had a temperature of 104° for almost a week when she was eighteen months old. She is now ten years of age.

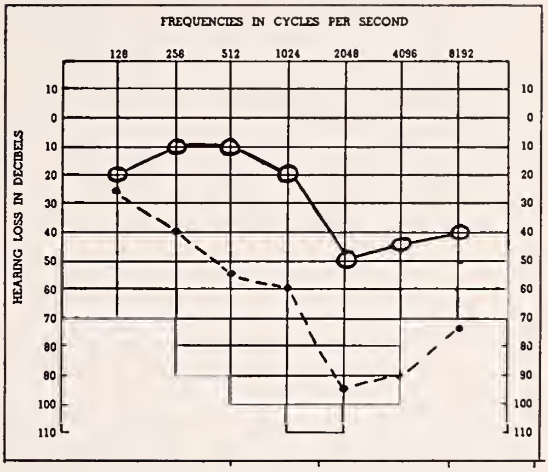


FIG. 1
B. J. H. Age 10 years.

3. Infections of the ear — otitis media, mastoiditis, and external otitis. Fig. 2 illustrates the effect of a mastoiditis on hearing. This patient is now twenty years of age. At five years of age she had a mastoidectomy.

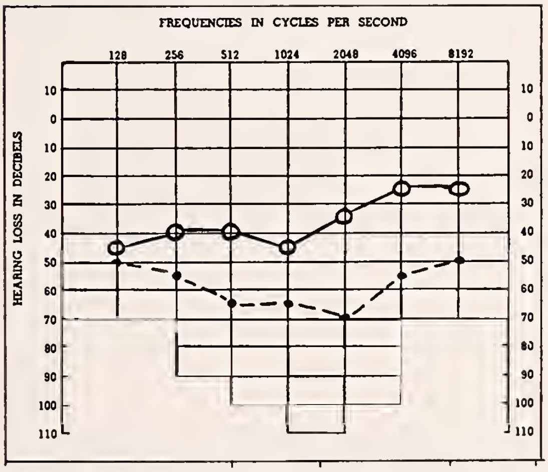


FIG. 2
E. S. Age 20 years.

4. Physical agents — impacted cerumen, foreign body impaction, accidental trauma to the ear, and acoustic trauma due to sudden excessive noise (explosions, gun fire, etc.).

In reviewing the above causes, it can be seen that many of the causes receive the attention of others of the profession besides the otologist. In such a way, and with emphasis on possible impairment of hearing, can all of us help in this undertaking.

What can be done in a concrete way to prevent deafness?

The prevention of congenital deafness is not an easy problem to solve. If hereditary deafness exists in both parents, the children of this marriage will almost certainly be deaf. If one parent has hereditary deafness and the other has a history of such in the family, authorities state that it is probable that the offspring will be deaf. If one family is free of such a history, the prospect of normal children is good. It can be seen, then, that the prevention of this type of deafness is a eugenic problem. Since the deaf are most likely to associate with others so afflicted, intermarriage cannot be prevented. However, the possibility of their having deaf children should be explained to them.

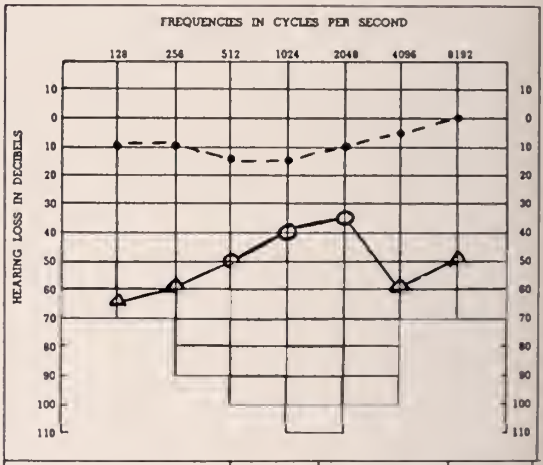
As far as German measles in the first trimester, it has been recommended that all young girls be exposed in childhood. It is only by previous exposure that such deafness can be prevented. The practicability of such exposure is open to question.

Control of prenatal syphilis and premarital blood tests has certainly decreased the possibility of a luetic cause.

All of the above cause a nerve deafness before acquisition of speech. The importance of preventing these can be readily seen, since it is extremely difficult to learn speech without hearing. It is true that it can be done, but not without laborious, time-consuming instruction. Seldom is speech learned under these conditions without a severe defect or even unintelligible speech. There is nothing so segregating as this handicap. It is further recommended that hearing tests be done on children who have been classed as feeble minded. Some of these have been found to have normal intelligence, but a severe deafness.

The prevention of acquired hearing losses is a twofold problem: (1) education of the community as to detection of hearing loss in a child, and general health measures; and (2) adequate treatment of medical disease.

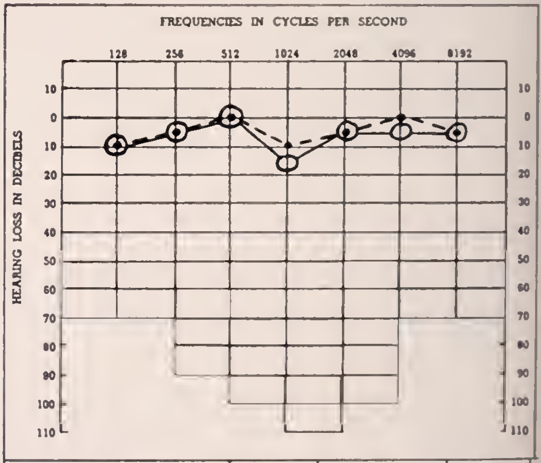
Approximately 80 per cent of preventible acquired hearing losses are due to Eustachian tube occlusion. Relatively, general infections of the nose and throat in the adult cause only minor difficulties with hearing. However, in the child similar infections all too often result in severe hearing impairment. The Eustachian tube of the child is short and patulous. It is also on a more horizontal plane than in the adult. This allows comparatively free access between the throat and the middle ear. This means, therefore, that any pathology with primary or secondary effects in the nose or throat is a potential cause of deafness in children. Figs. 3a and 3b illustrate a case of eustachian closure before and after a tonsillectomy.



Speech-Hearing Thresholds in DB Above Normal:	Free Field	Binaural Phones	Right Ear
	24		

FIG. 3A

F. T. Age 14. Before T & A—Feb. 14, 1951.



Speech-Hearing Thresholds in DB Above Normal:	Free Field	Binaural Phones	Right Ear
	4		

FIG. 3B

F. T. Re-test Aug. 8, 1951 after T & A—May 10, 1951.

It follows, then, that if the primary causes, such as a general infectious disease, for example measles, cannot be prevented, the secondary complications should be. Immunizations in childhood have certainly helped in a large degree to prevent deafness due to the disease itself. With the wide selection of effective antibiotics today, serious ear infections are fast becoming a rarity. However, a great deal more emphasis should be placed on possible hearing loss which may follow. This is often not noticeable and may be blamed on inattention in the child. It would be wiser to test these children's hearing following such disease.

Sometimes it is necessary to use radium therapy to the adenoid area about the eustachian tube orifices following surgery. This consists of three treatments at two-week intervals. It is an effective agent in competent hands, and has no danger whatsoever to the patient. This method has been used for many years at Johns Hopkins Hospital, where it was first instituted.

So far, at the Delaware Hospital Hearing Center, the bulk of cases of children have come from the State Board of Health. The detection of cases was by school screening tests or referred to the Board of Health by physicians.

An otological examination is done at their first visit. Any treatments needed are begun, and if any surgery is needed this, too, is recommended. A hearing test is recorded also on their first visit, and this is used to check on their future course and needs. Three months after removal of tonsils and adenoids, a second audiogram is done. Many who had hearing impairments before operation have been found to be normal. These cases, however, will be followed at six-month intervals for reexamination. Those needing speech and hearing instruction are enrolled in suitable classes.

In summation, then, the following points have been reviewed:

1. A conservation of hearing necessitates the full cooperation of not only otologists, but all physicians.
2. A pessimistic attitude to the severely deafened is a defeatest outlook. Many with nerve impairment can still be helped at the center with a hearing aid, and most important, instruction in using residual hearing.
3. It is hoped that all otologists will work in full cooperation with the audiologist. There is a part for both, each being important in his own sphere.
4. The detection of the hard of hearing, whether the moderate or severe degree, is the keystone of the whole effort.

PROCEDURES FOR THE TREATMENT OF COMMUNICATIVE DISORDERS RESULTING FROM IMPAIRMENT OF HEARING*

L. LeRoy Horne,
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Albertus Magnus, teacher of St. Thomas Aquinas, and the dominant figure in Latin learning and natural science of the thirteenth century wrote "Lion's brain, if eaten, causes madness, but remedies deafness, if inserted in the ear with some strong oil." Another scholar, Hildegard of Bingen (about 1125), held that "deafness may be remedied by cutting off a lion's right ear and holding it over the patient's ear just long enough to say, 'Hear, Adimacus, by the living God and the keen virtue of a lion's hearing'" and that "the heart of a weasel dried and placed with wax in the ear, benefits headaches and deafness."[1]

Over the centuries, little has been done for the individual with a permanent hearing impairment. However, in recent years, a new field has developed. Audiology, meaning the science of hearing, seems to be a useful name for this field, even though linguistic purists may object to adding a Greek suffix to a Latin root. Audiologic services were made available here at Delaware Hospital with the opening of the Audiology and Speech Center in February of this year.

The procedure of diagnosing and retraining the handicapped persons' communicative habits and related attitudes are the work of clinical audiology. There is a three fold objective in this audiologic task: (1) to determine which individuals have communicative disorders as a result of permanent handicapping hearing impairments; (2) to furnish the individual with the communicative tools with which to offset his impairment to an optimum degree; (3) to help him gain insight into his disability and the problem it raises.

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Complete diagnostic evaluation is a joint project for the otologist and the audiologist. It includes an otologic examination, a full series of hearing tests, psycho-acoustic and psycho-social examination, and a thorough case history.

Too much emphasis can not be placed upon the need for an accurate, efficient battery of routine physiologic-acoustic tests. More often than not, the otologist and the rehabilitative specialist are concerned to make related but somewhat different interpretations. Each must interpret for his own purposes, not content with a mere description of the disability, yet know what the other is doing and why he is doing it. Too often, tests of auditory acuity, of monaural relations, of peripheral-central comparisons, of threshold-suprathreshold contrasts of speech-hearing function in quiet and in ambient noise, are treated merely as physiologic descriptions without special interpretation for the task at hand. The otologist must assume responsibility for the optimum function of the hearing mechanism and for the physical welfare of the case; the rehabilitative specialist must assume responsibility for the communicative retraining of the person. Both must concern themselves with the psycho-social readjustment of the individual.[2]

At a minimum, our diagnostic tests include the following: (1) puretone audiometry, with properly calibrated equipment and with due recourse to masking when binaural disparity or inconsistency indicate its use; (2) speech audiometry, the determination of the intelligibility threshold for standard speech signals; (3) speech and voice tests, including tests for discrimination loss. Other related tests and retests may be called for by the routine findings. These may include: (1) psychometric examination; (2) loudness-balance tests; (3) monaural-binaural tests of acuity for various types of signals; (4) the Lombard test (particularly useful to recheck unilateral hearing loss when there is a possibility of functional disparity); (5) the Doerfler-Stewart test, or some variation, for malingering and psychogenic deafness. Still other possibilities will be suggested by the nature of the findings and by the details of the case history. Moreover, it often proves true that the task of fitting a hearing aid throws additional diagnostic light on the particular case.

Our Audiology and Speech Center is adequately equipped with office space, clinical acoustic rooms, teaching areas and work bench area for minor electronic and hearing aid repairs and endaural insert impressions.

In the clinical acoustic rooms, where hearing tests are administered, isolation from extraneous sounds has been carefully planned, for the effect of masking on hearing is well known. Fluctuations in the noise level of a testing room has been isolated and ambient noise level is maintained below 24 db. In the audiometric testing rooms, sound level is maintained at about 35 db.

In order to properly conduct the tests previously mentioned extensive electro-acoustic equipment has been assembled. There are three modern audiometers, properly calibrated and maintained. A complex electronic hearing evaluator for the sound-free room and control-room area. This versatile assembly is capable of accepting several different imput signals separately or at the same time. These signals are transmitted through one amplifier. There is also provided a high-fidelity loud-speaker assembly, two headphones, capable of being controlled separately as well as one unit. For communication with the tester, a one-way microphone, amplifier-headphone, talk-back system is provided. This equipment makes possible the determination of speech-hearing thresholds and the administration of an infinite variety of speech and pure tone tests.

Galvanic skin response equipment has recently been installed. With this equipment has been developed a technique whereby threshold audiometric measurements may be obtained with infants, very young children, and with psychogenics. The method employs the "ascending technique" in audiometry, together with the Feré effect and a modified form of Pavlovian conditioning. Mild faradic shock is used for conditioning. The idea is that, with the use of pure tone as a warning signal a few seconds before a shock is given, a child can be conditioned so that significant skin-resistance changes are developed following the tone in anticipation of the shock. What happens in this use of the Feré effect is that stimulation of the sympathetic nervous system (internally by 'thinking' or 'reacting emotionally'; externally by the application of a pinprick, a mild shock, a sound, and the like) increases the activity of the sweat glands: increase saline in the skin under the electrodes causes a lowering of the resistance and therefore a change in the currents in the bridge. The changes in the bridge-currents are amplified and recorded in wave form, and can be interpreted as positive or negative responses to the stimuli.

With the assumption of reasonably normal sympathetic responses from the child, skin-resistance audiometry is the only method recently known that promises to meet all the criteria applicable to clinical diagnostic testing of the acuity of the auditory end-organ in infants and very young children.

Thus on every patient, a complete battery of tests can be administered in order to properly evaluate the hearing disability in terms of actual extent of the organic loss.

Now, before any audiologic recommendations can be made, if it has not already been accomplished, the patient is referred to the otologist for consultation because it must be determined what the etiologic factors are: whether the hearing loss is permanent; whether the hearing can be improved medically; what the hearing prognosis is; whether there is active pathology, etc. In short, the optimum functioning of the hearing mechanism must be insured.

Then, through interview and counseling, a determination is made as to the extent of the communicative disorder caused by the loss of hearing acuity and a psycho-social evaluation is made.

Based on otologic findings, medical history, diagnostic hearing tests, psycho-acoustic and psycho-social examination, a diagnostic hearing evaluation is made. Interpretation of audiologic findings and recommendations for retraining are made with the clinic purpose clearly in mind. The audiologist must make the best possible use of whatever facts and meanings can be brought to light, but his interpretations and recommendations are made primarily in terms of the communicative needs of the individual and the readjustment of his behavior.

Every person with a hearing impairment is entitled to a complete diagnostic evaluation. A program of auditory rehabilitation can be devised for every type and degree of hearing loss and for all ages. Our patients here already have ranged from the "deaf" 2 year old to the 84 year old gentleman who has been hard of hearing for years.

In the case of an adult whose hearing loss post-dates the acquisition of language, we have one type of problem. If a hearing aid is indicated, a scientific objective hearing aid selection is made, based on the performance of the patient on the various hearing aids tried. The patient is then given intensive auditory training to teach him to use his residual hearing to best advantage and to become a "successful hearing aid wearer". Speech-reading- speech therapy, speech conservation, language training, mental hygiene and vocational counseling also are available. Even within this category the program must be flexible, for problems differ with type of loss, with the degree of loss, the personality factors involved and a multitude of other factors too numerous to mention.

If the hearing impairment pre-dates the acquisition of language, which is so often the case in the youngsters seen at the center, the problem is quite different. In some instances language development is severely retarded and often completely absent. Hearing is evaluated primarily through galvanic skin response audiometry. Parents and home environment must be evaluated to determine feasibility of training the child at home. If this is feasible, we think in terms of hearing aid possibilities, sense training, auditory training, language and speech development, parent education and counseling, etc. If evaluated early enough, and given proper training, many hard of hearing children can remain at home and eventually enter normal grade school. Recommendation for resident schools for the deaf must be made in some instances.

Because diagnostic interpretation and retraining procedures must be carried out to suit the requirements of the "whole person," it is difficult to generalize the clinical methodology. Hearing aid recommendations, speech reading, auditory training, speech therapy, etc. are not separate entities but are considered with all other aspects which can contrib-

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ute to the rehabilitative task and are or are not recommended and provided after complete diagnostic evaluation.

We are pleased to be a part of a general hospital where services of all medical specialties are available. It is obvious that otology is indispensable to audiology; ideally every pre-school age audiologic patient should have a complete pediatric work-up; so very often we feel that psychological or neurological consultation is indicated before hearing can be properly evaluated or a program of re-education can be properly provided. And so it goes down the line of specialties.

Conversely, our services are here for you to utilize. How many recommendations have been made for institutionalization of the apparently feebleminded, without ruling out the possibility of deafness rather than mental retardation? If you, a pediatrician have a retarded infant or youngster as a patient would you like help in ruling out deafness as a contributing factor? How many cases of cerebral palsy are there whose hearing should be investigated? It has been found that there is usually some 8th nerve involvement in almost all cp's. If you, an obstetrician, have a hard of hearing patient with otosclerosis, would you like to know how much the progression is hastened by each pregnancy? Many psychological problems in both adults and children have been found to have unsuspected deafness as a primary cause. Or, as a psychiatrist with a suspected conversion hysteria or psychogenic overlay, would you care to know the actual extent of organic hearing impairment? Or for you, as a neurologist, can we discover evidence of 8th nerve involvement?

Audiologically, therefore, we have a dual purpose:

(1) to function as a hearing diagnostic center;

(2) to function as a hearing rehabilitation center, with the ultimate aim of teaching the hard of hearing individual to compensate for his communicative difficulties in such a way that he can live a reasonably normal existence in a hearing world.

Let me cite examples to illustrate how our services function.

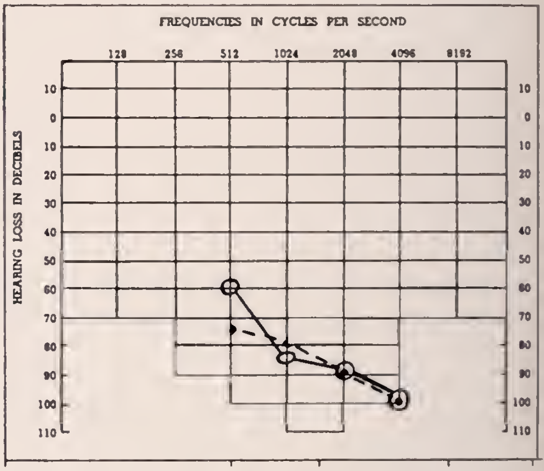


FIG. 1

A. B. Age 3 years. Galvanic Skin-response. Audiogram—May 30, 1950.

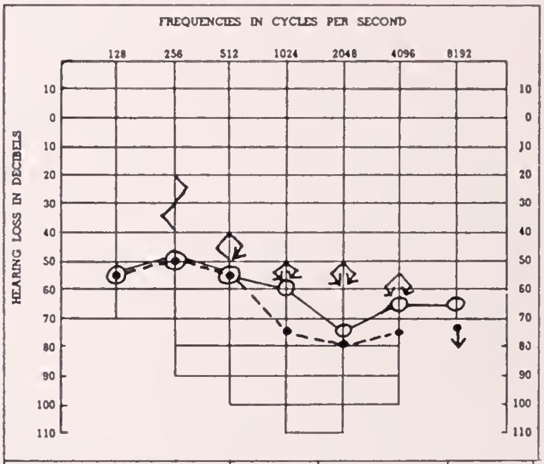
The three cases that I have chosen as illustrations are rather typical of the type of case that we are apt to receive in the audiology center. The first case is that of a child, A. B. (Fig. 1), male, born on February 27, 1947. He has two older sisters, one eight and one six. They have no difficulty with their hearing. The father has been hard of hearing all his life and his deafness has been diagnosed as a nerve type but the cause has not been ascertained. There has been some deafness in distant branches of the paternal grandmother's family. Two great aunts are supposed to have been born deaf. The child was out of a normal pregnancy, and was full term. The mother had no rubella, no bleeding, no unexplained fever during pregnancy. The mother's Rh is negative and the father has a questionably negative Rh. The child was not jaundiced at birth and he had no transfusions. He has had a bilateral ptosis of both eye lids and has had eccentric pear-shaped pupils. The parents think that the lid lag is a result of an infection of tear ducts developed when the child was an infant but this is not quite clear. He has had no serious illness, no loss of consciousness and no convulsions. He has had no difficulty with his ears and no otitis media. He had mumps at the age of one; measles at the age of two, when he ran a fever of about 105 degrees. During the winter of 1949 he had two virus infections. Development: the child did not walk until he was two and a half years of age. He fed himself at 14 months. He was toilet trained at 3 years. When first seen at the age of three his speech development was severely retarded and speech was practically non existent. He uttered a few guttural sounds mostly of a vowel quality with no discernable consonants. His hearing loss was suspected between the age of one and two, as he has always responded poorly to sounds. He did not even notice hands when they were clapped behind him. He listened to the radio and kept time with it but it had to be turned very high. He did not play too well with children, was rather possessive and fairly aggressive. He was subject to rather marked temper tantrums. There has been no special attempt made at any education.

When first examined in 1950, otological examination showed the following: Glands—not enlarged. Ears—drums were quite retracted and very slightly injected. Nose and Mouth—the membranes were good color, the breathing space was sufficient. There was no discharge seen in either nostril. There was a very large mass of adenoid tissue in the nasopharynx. The eustachian orifices were covered with adenoids. The tonsils were moderately enlarged and somewhat injected. The pharynx was slightly injected, there was some post-nasal discharge visible and some hypertrophied lymphoid tissue on the posterior wall. Sinuses were not examined. Diagnosis made at the time was: Hearing impairment, bilateral, severe nerve type, probably on a congenital basis. Tonsils and adenoids were subsequently removed surgically in the fall of 1950 with good surgical results. T & A produce some slight improvement in hearing but not sufficient to be of a clinical significance.

In the fall of 1950 a long range program of hearing rehabilitation was planned for this family. The youngster was introduced to amplification using a portable table-type binaural headset amplifier and a program of sense training, language development and speech habilitation was instituted. He was given intensive work in auditory training and a program was developed for his family to follow. This program included speech development, lip reading instruction and development of awareness of communication. In April 1951 he was fitted with a wearable hearing aid and a custom-made endaural insert. He has now progressed to the point where he wears the hearing aid during his entire waking day. He is seen in our center for two therapy sessions a week and since the acquisition of the wearable hearing aid he has made remarkable progress. He is fortunate to have been blessed with intelligent, steady parents who are well aware of the problem and are constantly working with him and stimulating him with speech and language situations. He is now talking in whole sentences and communicates very well. He plays well with children and there has been no evidence of temper tantrums for months. He has developed but few of the usual hard of hearing mannerisms, none of the usual voice and speech patterns so commonly heard among the deaf.

The majority of the therapy in cases of this kind must be conducted by the parents under the guidance of a trained audiologist. Progress in this case is very satisfactory and we are sure that if it continues he shall be able to enter normal grade school and compete successfully with normal hearing children and that there shall be no reason for confining him to a resident school for the deaf at any time. Ptosis of the left eye lid was corrected surgically at Delaware Hospital on May 15, 1951 and the right eye lid on June 5, 1951 with good surgical results. With the application of what we believe to be good rehabilitative procedures this child is developing language and speech normally with good inflection in his voice, good intonation patterns and good voice quality. All this work has been done at home and here at the Center with the result that he has been able to maintain residence with his parents which is most advantageous for children of his age. There has been no use of manual sign language whatsoever and no institutionalization has been required.

The next example is that of a young lady, Miss C. D., 17 years of age. The history in this instance is incomplete, due to the involved family background. The father and mother were separated and the father has shown very little interest in the child. The mother is presently a patient at the Delaware State Hospital at Farnhurst. Deafness is reported to have been congenital of a severe nerve type. Fig. 2 shows the audiogram taken in our clinic on September 14, 1951. For six years prior to coming to our clinic she had been a resident student at a state school for the deaf. Otological examination showed no active pathology but no detailed report was furnished as to the appearance of the ear, nose and throat. Patient reported that during her six years at the school she had had very little work with amplification, she had worn a hearing aid for a period of two weeks but it had been abandoned, and she indicated that she made very little use of her vocal mechanism but did most of her communication through the manual sign language. When first seen her speech was barely intelligible; she had severe articulatory disorders and limited use of language. Her voice was lacking in inflection and had an extreme breathy quality. She seemed to tire very easily when she used it. Although she was a fairly proficient lip-reader, and signified understanding she made little effort at oral communication but resorted to gestures. She gained nothing from radio, television or the movies and avoided social contacts except with deaf youngsters at the school who used the manual sign language. Deaf school reported ninth grade attainment in written subject matter. Psychometric testing revealed above average intelligence.



Speech-Hearing Thresholds in DB Above Normal:	Free Field	Binaural Phones	Right Ear
	60		

FIG. 2

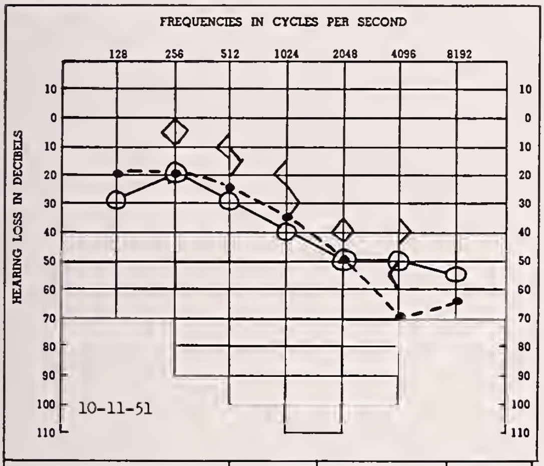
C. D. Age 17 years. Subjective audiogram—Sept. 14, 1951.

A hearing aid selection was accomplished and a hearing aid recommendations were made. This particular case is a ward of the State Department of Vocational Education and the latter agency purchased her a hearing prosthesis. She made an excellent adjustment to amplification and even though without amplification she required an intensity of 60 db. to hear speech stimuli, with amplification she could comprehend easily at 18 db., or well within normal hearing range. She has been given an intensive and extensive program of training, in audition, speech correction and communication and has progressed well. Her voice quality has changed to a remarkable degree and she communicates very well. Through speech therapy she has been taught how to use her voice with less strain and now talks for long periods of time without tiring. She has tremendous imitative ability and has been able to improve her speech at a remarkable pace. Upon our recommendation, she did not return to the state school for the deaf from which she had come but arrangements were made for her to reside with an aunt, locally, while she attended classes here at the Center. After a considerable period of hearing rehabilitation, arrangements were made for her to attend a local business school where she is now enrolled five days a week, with a full program of business arithmetic, typing, filing, etc. She enjoys the work at the school very much, is making good progress, and in order to facilitate her learning she is being given individual instruction. As an additional part of her rehabilitative procedures, she has been aided in securing a position with a local department store, working on Saturdays in order to have more contact with hearing and talking people. This young woman is a good example of good rehabilitation material and has made a good adjustment and before long will be able to take her place as a self supporting and well adjusted member of a hearing population.

I would like to give you some background on one of our favorite patients. Mr. E. F. is 84 years young. He reported that he had been hard of hearing for approximately 20 years. He added that it had been becoming progressively worse in recent years. He complained of inability to hear his radio and television programs; constant necessity to ask for repeats in conversation both in social and business situations, resulting in repeated frustration. Otological examination revealed external ear normal, canal normal, tympani membrana normal. Nose multiple small polyps and pansinusitis, transillumination being all dark.

Nasopharynx was negative and oropharynx negative. Diagnosis was pansinusitis, (2) allergic rhinitis and (3) arteriosclerosis. Although this has not been confirmed with his physician, the patient reported that he was a diabetic and had an eye condition giving him sight in only eye.

He was given a battery of objective hearing tests on October 2, 1951 which revealed that he had a moderately severe nerve deafness, and Fig. 3 shows his hearing picture. Hearing aid recommendations are always made with extreme caution when there are gerontal involvements. However, this individual was obviously mentally active and alert. He is very much the active extrovert, is fond of people and is disturbed by his communicative disorder. He himself took the step to secure help with his hearing problem without outside urging and after careful consideration and after all the problems involved were fully explained to him.



Speech-Hearing Thresholds in DB Above Normal:	Free Field	Binaural Phones	Right Ear
	38		
Discrimination Loss:	24 %	%	%

FIG. 3

E. F. Age 84 years. Subjective Audiogram—Oct. 11. 1951.

He was subsequently fitted with a wearable hearing aid to which he adjusted well. In the beginning he had some problems of tolerance for loud noises but he overcame these quickly and adjusted like a duck taking to water. This octogenarian is a typical example of that type of the older person who can be rehabilitated. He operates an active and busy general merchandise business in Wilmington, and is still working in his store nine hours a day. You so often hear stated that when a person reaches this age you can not teach an old dog new tricks or he is not interested in hearing what people have to say. We have found this is not necessarily true and that many cases indicate a complete program of rehabilitation. You also may have heard it stated that those with nerve type deafness can not be helped by amplification. This we have not found to be true and I should say in the years I worked with service personnel and veterans I have come in contact with 6-7000 adults and that in only about five or six cases did we find it impossible to provide some worthwhile benefit with amplification.

We have been in operation approximately nine months. Patient volume is growing slowly but steadily and has recently shown a considerable increase. In the nine month period we have treated 240 patients for a total of 786 patient visits. Indication of the recent increase in patient load is the fact that in the month of October we had 190 patient visits, which is about 25% of all visits to-date. We have excellent programs established with many of the state agencies. A full and complete program has been established with the State Board of Health under which program we furnish complete diagnostic and rehabilitative services to pre-school and school age children from all over the state. We have similar arrangements with the State Board of Vocational Education for furnishing similar services to the hard of hearing adults under their auspices. Referrals are being made to us from public and private school systems, private educators, other hospitals, such as Johns Hopkins, otologists, pediatricians, obstetricians, neurologists, psychologists, general practitioners, and private individuals. Patients are coming in regularly from not only the Wilmington area but the lower end of Delaware, southern Pennsylvania, and southern New Jersey, some patients making a 200 mile round trip twice weekly for therapy. One request for services has even been made from as far away as Akron, Ohio.

Our existence is gradually becoming known and we are trying in every way to fill the need for audiologic services which we know exists in this area.

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THE ROLE OF THE SPEECH THERAPIST IN THE GENERAL HOSPITAL

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To many of us speech is as casual a function as breathing or walking. We never think very much about it. Communication seems to require no greater skill than merely thinking aloud and listening to the thoughts of the other person. Actually, however, there is probably no human behavior so intricately coordinated as speech and, unfortunately, there exists a great number of factors ranging from environmental to neurological which alone, or in combination, can cause speech and language to be defective. It is small wonder then that there is estimated to be in this country alone, a group of persons numbering over six times the total number of blind, deaf, crippled, and mentally defective combined. This group consists of those who suffer from speech defects.

We say a person has a speech defect when it deviates so far from the speech of other people in the group that it calls attention to itself, interferes with communication, or causes its possessor to be maladjusted to his environment.

The treatment of this vast number of speech disorders is being carried out for the most part today in our public school speech correction programs and in university speech and hearing centers. There are many areas, however, that do not have the advantage of a university center. In this area, for example, although the University of Delaware has a speech department, its main emphasis is on the speech sciences and not on speech correction and speech pathology. The Speech Center at the Delaware Hospital is the only one of its kind serving this area for the purpose of diagnosing and treating disorders of speech and hearing.

One great advantage of a speech center within a general hospital is that it makes more readily available certain medical information that the speech pathologist or correctionist must have in order to carry out an efficient and effective speech correction program. Rare, indeed, is the speech problem where we do not feel the necessity of consulting certain medical specialists to help us obtain an accurate and complete picture of the case before us. From the simple articulation case to the complex case of aphasia it is important to acquire all information possible so that we can rule out certain factors as contributing to the problem, and so we can more clearly define certain goals as concerns prognosis and methods of treatment. Recognizing that, at any given moment, one is a product of his inheritance and of all his past experiences, we are interested not only in the various aspects of each case's present condition, but also his various records, including his medical and surgical, dental, nutritional, otological, neurological, developmental, psychological, and educational histories. Thus a speech center within a general hospital has a better opportunity to obtain much of this important information. But this does not complete the picture.

There are many instances where there should be a definite working relationship, a team if you please, composed of certain medical specialists and the speech therapist. One example of this is the case of the cleft palate child. Such a case not only requires the expert services of the oral surgeon, the orthodontist, and prosthodontist but there is a definite place on this team for the speech therapist. It is his aim, in this case, through the use of certain techniques and methods, to strengthen the repaired oral structures, especially the palate, and to teach the patient to use them effectively and to the greatest advantage so that nasality is reduced to a minimum and socially acceptable speech is acquired. It requires the close cooperation and team work of all these specialists to provide for the cleft palate child the best opportunities for a normal existence.

The combined services of the orthopedic surgeon, the occupational therapist, the psysio-therapist, and the speech therapist working together to rehabilitate the cerebral palsied child is another splendid example of the "team" program.

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Then there is the case of the aphasic, who is characterized by inability to comprehend, formulate, or express certain ideas through speech. Before attempting to rehabilitate this person speech-wise, we want a full neurological report, and in many instances a complete psychological work-up. Again, only by securing all the information possible and working in close cooperation with all those concerned can we hope to achieve a fruitful and successful speech retraining program.

The delayed speech case whose speech and language function is below the norms of other children of his age, is brought to a speech center by his parents for help with his problem. How foolish it would be to institute corrective speech procedures without first consulting the pediatrician, the otologist, audiologist and the psychologist; the nasality case without first obtaining otorhinolaryngological information to determine if there are any pathological factors which may be causing the distorted, hypernasal speech, and so on down the list of the many types of speech and language defects. For any speech therapist there is a constant need for consulting and seeking the advice of medical authorities who have a common interest in the case. How much easier it is to carry out this consulting and cooperative program when the various specialists are centralized as in a general hospital. How difficult and time consuming it is sometimes for the university center or public school correctionist to secure this information. It may delay beginning treatment weeks or months, and early treatment is sometimes just as important a factor in the field of speech correction as it is in the medical field.

So far, I've attempted to point out some of the advantages that a speech therapist feels and recognizes as being included as part of the services offered by the general hospital. The opportunity of having close hand information and medical specialists with whom we can work and to whom we can refer patients with speech difficulties, helps us, as speech correctionists, to become aware of all aspects of the case so we will know more definitely the rate and amount of progress we can hope to attain when helping the person to overcome his speech problem.

But it is equally as important to consider, for a moment, the many areas in which the Speech Center could be of service to different types of cases that are seen by medical specialists in the hospital—cases that could benefit from speech or voice therapy. For example, a patient is troubled with persistent hoarseness and he is seen by the laryngologist. Laryngologic examination reveals nothing which is of etiological or pathological significance. The diagnosis is that the hoarseness is due to chronic misuse of the voice. In such a case the person should also be seen by a speech therapist whose aim would be to explain how he is abusing his voice, and to teach and train this particular patient how to use his voice correctly and how to phonate at an optimum pitch level so that irritation of the vocal folds is reduced and the hoarseness condition alleviated.

Or an example of another voice condition—hysterical aphonia—which is due to an hysterical symptom formation and is characterized by loss of voice for purpose of speech with no accompanying laryngeal pathology. The Speech Center is also prepared and equipped to treat cases such as this. It has been found that cases, such as the one just described, often require only a few sessions of voice therapy and counseling before their voice returns to normal. It is important, of course, to have the assistance of the psychiatrist and psychologist to prevent manifestation of the hysterical symptom from appearing or transferring to some other bodily function.

Still another example is the person with cancer of the larynx who must undergo a laryngectomy. If this person, prior to the operation, could be brought to the attention of the speech therapist and have it explained that such an operation does not necessarily mean that he'll have to go without speech, that it's possible to acquire a "new voice," that esophageal speech, as the new voice is called, is being used successfully by hundreds of people who have had the same operation and that he, too, with proper training can learn to communicate as effectively as before — then how much better that individual's personal outlook will be when he learns he'll be able to carry on, for the most part, just the same as before.

Sometimes, we even begin basic instruction and teaching esophageal speech before surgery, and usually within a few weeks, sometimes even within a few days after the operation, speech training is resumed.

These are only a few of the instances and ways a speech therapist functions in the general hospital. The examples were cited to illustrate the need and advantages of a working relationship between the medical staff and the speech pathologist, and to point out the types and kind of services the Audiology and Speech Center of the Delaware Hospital has to offer.

Since the inception of this Center we have. seen and worked with the following types of speech and language disorders: articulatory defects, delayed speech, cleft palate, stuttering, nasality, aphasia, a laryngectomy case, and of course speech defects associated with and resulting from hearing impairment. In addition to actual speech therapy, our present program includes parent education and guidance, with suggestions to the parents as to how they might carry out a supportive speech training or retraining program in the home, and mental hygiene to impress upon the parents, or the patient, whichever the case may be, the importance of accepting the problem and of setting goals which are actualistic and realistic so that speech therapy may progress and prognosis is not guarded by too many psychological and emotional factors.

To date, our speech therapy program has been quite successful. This is due in large part to the physical location of our Center, the fine equipment we have, and the splendid cooperation we've had from local agencies and physicians. We hope that eventually, as the Center and its services become better known to the public and to the medical men in this area, that we'll be recognized as a Center of major significance in the field of speech and hearing therapy. Only through continued cooperation and working together with the specialists in the allied medical fields, can we hope to make our services more valuable to the hospital and to the community.

CORTICAL STEROIDS AND CLINICAL MEDICINE*

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The physician who is to use ACTH or cortisone wisely must remember that he is (a) using potent hormones that (b) specifically cure no disease. Aside from rare instances of replacement therapy (as in Addison's disease, Waterhouse-Friderichsen syndrome, and panhypopituitarism) doses of these hormones currently employed are sufficiently high to be viewed as certainly unphysiologic and probably pharmacologic in action. By using ACTH or cortisone the physician usually produces a temporary and artificial hormone inbalance in the body of his patient in an effort to modify (suppress) the course of disease. This is well illustrated in the treatment of so-called collagen diseases, no one of which is due to adrenocortical failure, i.e., a lack of normal cortical hormone supply.

In the interest of best care of the patient we need to keep abreast of the state of knowledge of the function of the endocrine glands in health and disease with particular reference to the pituitary-adrenal axis. Sayers[1] recently has reviewed knowledge of the function of the adrenal cortex.

Of 28 crystalline steroids which have been isolated from adrenal tissue a half dozen have some known biological activity.[2] Only minute amounts of these steroids are stored in the adrenal cortex. The exact nature and number of such chemical materials elaborated by the adrenal gland is unknown. They undergo rapid changes in the tissues of the body, the nature of which change is likewise unknown.

Clues to adrenocortical activity are found in alterations in the cortex (gross, histological and chemical changes), in alterations in the organisms (lymphocytopenia, fall in circulating eosinophil count, alteration in carbohydrate and protein metabolism, changes in water and electrolyte metabolism), and varying rates of excretion of steroids in the urine. Urinary corticoids are classified as biocorticoids (steroids with biological activity) and chemocorticoids (having the chemical nature of steroids without regard to activity). Study of one of the oldest colorimetric tests for an excretory form of steroid hormones, i.e., the "urinary 17-ketosteroids", has led to the following conclusion: under normal conditions adrenocortical function is responsible for the total 17-ketosteroid excretion in the adult female and for two-thirds of the urinary 17-ketosteroids in the male. The testes contribute the remaining one-third in the male. There is reason to believe that 17-ketosteroids and possibly even androgens may arise from adrenal cortical hormones by degradation in the liver and other tissues.

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*Abstract of an address given before the Sussex County Medical Society, Milford, Delaware, November 8, 1951.

**Attending Chief, Medical Department, Delaware Hospital.

The secretion of an adrenocorticotropic hormone (ACTH) by the pituitary gland is an essential link in the series of events, initiated by stress, which activate the adrenal cortex. In man with normal adrenal glands ACTH administration brings about all the metabolic changes which have been ascribed to the adrenal cortex. Chief regulatory mechanisms affecting the rate of discharge of ACTH appear to be:

a) Peripheral-humoral: the titer of cortical hormone or hormones in the body fluids regulates the rate of discharge of ACTH.

b) Central neural and central neurohumoral: a nervous reflex mechanism allows speedy response of the pituitary to acute need by the body.

c) Sympatho-adrenal system: epinephrine has a stimulating effect on the production of ACTH. A wide variety of stresses acting on the sympathetic nervous system results in the discharge of ACTH. (See Fig. 1).

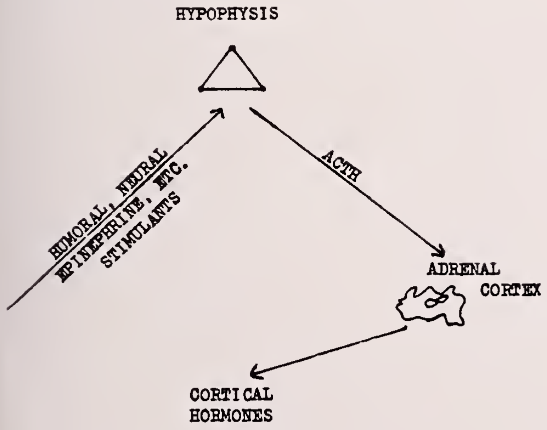

FIG. 1

Estimates on the rate of secretion of cortical hormone (under optimal and stressful conditions) by various methods and investigators indicate that, in terms of cortisone, between 0.1 and 20 mg. of hormone per kilogram of body weight may be produced daily in the rat, dog and man.[1] In view of the many metabolic activities influenced by the adrenal cortex it is tempting to classify known steroids in three categories, based on chemical structure and known effects. This oversimplification may be justified by its aid to the clinician who finds himself lost in the maze of reported findings in adrenal chemistry and physiology.

1) 11-oxysteroids (affecting carbohydrate and protein metabolism, causing sodiumphoresis, lymphocytopenia and eosinopenia) "Glucocorticoids". Example: cortisone.

2) 11-desoxysteroids (causing sodium retention and other DCA-like effects on electrolytes) "Mineralo-corticoids". Example: desoxycorticosterone acetate.

3) Ketosteroids (with androgenic and protein anabolic action). Example: adrenosterone.

A review of the broad scope of metabolic effects of pituitary tropin and cortisone has been made by Sprague[3] and need not be summarized here.

Whether cortisone is given the patient or his adrenal is stimulated to produce excess cortical hormone by ACTH, the effects are comparable in the immediate pharmacologic effects seen in the patient. In the first instance there may be suppression of the patient's adrenocortical function, clinical evidence of which can be demonstrated after discontinuing cortisone. Also there is possibly reduction in some functional activity of the pituitary while cortisone is given. These phenomena are not highly significant during and after short periods of hormone medication, so far as we know at present.[4]

The cortisone and ACTH effects in collagen diseases mark a new era in clinical medicine. Studies on the mechanism of action have yet to explain just what happens in tissue cells when excess cortisone is present. Three theories of action which have received attention are: "1) interference with the release or the toxic action of the anaphylactogenic substance of the antigen-antibody reaction; 2) alterations in cell permeability through action on hyaluronidase; and 3) suppression of mesenchymal tissue, in particular inhibition of the development of granulation tissue.''[4]

The chief effect of cortisone and ACTH seem to lie in the capacity to inhibit the reactivity of mesenchymal tissues, to block reactionse of allergy and hypersensitivity[5] and to suppress inflammation resulting from bacterial infection or chemical irritants.[5]

The principal diseases treated with ACTH and cortisone during the past three years may be grouped as follows:

I. Replacement Therapy
   Adrenal Cortical Failure (Addison's Disease, Congenital Adrenal Hypoplasia, Waterhouse-Friderichsen syndrome following Adrenalectomy for Hypertension, and in panhypopituitarism)
II. Collagen Diseases
   Rheumatic Fever
   Rheumatoid Arthritis
   Lupus Erythematosus
   Scleroderma
III. Allergies
   Asthma
   Uticaria
   Drug Sensitization
   Loefller's Syndrome
   Periarteritis Nodosa
   Serum Sickness
IV. Ocular Lesions
   Choroiditis
   Uveitis
   Sympathetic Ophthalmia
   Kerato-Conjunctivitis of various types
   Miscellaneous inflammatory and developmental defects
V. Skin
   Inflammations and allergies such as Pemphigus, Exfoliative Dermatitis, Burns and Scleredema
VI. Intestine
   Ulcerative Colitis, Regional Enteritis
VII. Kidney
   Nephrosis and Nephrotic Syndrome
VIII. Pulmonary Granulomatosis, e.g. Berylliosis
IX. Gout
X. Lymphatic Tumors: acquired Idiopathic Hemolytic Anemias

Undesirable effects from the clinical use of the hormones are chiefly these:—

1. Cushing's Syndrome: hypertension, edema, moon face, amenorrhea, mental depression (plus skin changes below).
2. Skin: hyperpigmentation, acne, hypertrichosis, increased skin oiliness, striae atrophicae, delayed wound healing.
3. Central Nervous System: both manic and depressive states. Usual effect is that of euphoria; psychosis or convulsion occasionally.
4. Antipyretic Effect: may conceal presence of infection and disturb immunologic responses.
5. Electrolytes: early sodium and water retention; later hypochloremic, hypopotassemic alkalosis.
6. Blood sugar elevation and glycosuria. Increased urinary nitrogen. ''Diabetogenic'' effect and negative nitrogen balance only in large doses.
7. G. I. System: (a) increases pepsinogen (pepsin and uropepsin); (b) may cause bleeding or perforation of peptic ulcer.
8. Adverse effect on tuberculosis and other infections.
9. Induces failure in poorly compensated heart disease.
10. Relapses in malaria, more frequent head colds and other virus infections.
11. Hemolytic crises in sickle-cell anemia.

A review of the clinical records of 89 patients treated with cortisone or ACTH in the Delaware Hospital during 1950 and 1951 shows that undesired effects were minimal. Detectable water retention during the first three or four days of treatment were observed in 21 patients. Rounding of the contour of the face (''moon face'') was noted in 7 patients, temporary increase in blood pressure (10 millimeters mercury rise in diastolic reading) occurred in 9, and euphoria in 5 patients.

Two patients responded with an unfavorable mental state, 2 with increased ''nervousness'', and 2 developed myocardial infarction while under treatment. The small number of unfavorable mental states noted in this series of patients may have been, at least in part, the result of an adequate potassium intake.[6] While the appearance of acute myocardial infarction may have been fortuitous in the two patients so affected, the event emphasizes the need for pause when considering hormone therapy in the presence of hypertensive or arteriosclerotic heart disease. Only one patient developed a significant hypokalemia during treatment.

Of the 49 patients receiving cortisone, 37 (75.5 per cent) had the hormone for a period of twelve days or less. Of the 40 patients receiving ACTH, 28 (70 per cent) had that medication continuously for twelve days or less. Short term therapy was found to be less likely to produce undesired effects than was long term therapy. Some of the unwanted manifestations (actually not "side effects") of cortisone therapy, e.g. increased blood pressure, were controlled in part by giving the patient a low sodium diet and adding potassium. Quantitative esoinophil counts gave variable results and were of little help in following the course of the patients since many patients had low counts at the beginning of treatment.

Ninety per cent of the patients in the Delaware Hospital group had disease which clearly justified the use of one of the hormones on the basis of previous experience. The immediate results of therapy were favorable to a varying degree in 40 patients (45 per cent). No benefit was seen in 29 patients (32.5 per cent) and the records contained no comment as to the response of 20 patients (22.5 per cent). The inability of the hormones to cure disease is emphasized in the fact that 11 patients (27.5 per cent of the group showing temporary benefit) had a return of symptoms before they left the hospital or soon thereafter (shown in a follow-up or a later admission note). Since the follow-up for this group after discharge from the hospital is quite incomplete, one cannot say how many other patients in the benefited group had a recrudescence of their disease in subsequent weeks or months. Inflammatory eye disease, asthma and dermatitis medicamentosa had high incidences of favorable response to the hormones. In the series there were 16 patients diagnosed as having rheumatoid arthritis. Only 11 of these had a satisfactory immediate response.

In conclusion, it appears that these potent hormones can be used safely for short periods with a minimal number of undesired effects. Using large doses or prolonging their use calls for careful observation of the patient and laboratory study of electrolyte and nitrogen metabolism. All of the tissues of the body probably are affected to some extent when the currently popular "pharmacologic" doses of cortisone or pituitary tropin are employed. Only rarely does one find a need for replacement adrenal or pituitary hormone therapy. The ability to modify the course of disease in allergy, hypersensitivity, acute ocular and cardiac inflammation, and disorders of collagen is a superb aid to the physician provided he keeps clearly in mind the limitations of the hormones, the true nature of the patient and the known facts of his disease. Cortical hormones actually cure no presently known disease.

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INTRA-ARTERIAL HISTAMINE IN PERIPHERAL VASCULAR DISEASE*

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The purpose of this paper is to present a new simplified technique for the use of intra-arterial histamine in treating occlusive vascular diseases of the lower extremities. The problem of peripheral vascular disease, due to arteriosclerosis, is becoming increasingly important because of the advancing age of the general population.

A number of substances have been recommended in the past two decades as a means of improving the peripheral arterial circulation. These have been listed by Linton[1] and include the intravenous injection of a hypertonic solution of sodium chloride; a non-specific foreign protein (typhoid vaccine); ether; the intramuscular injection of sodium tetrathionate; the oral administration of cytochrome C or vitamin E; and the subcutaneous injection of histidine combined with the oral administration of vitamin C. Beneficial effects of these methods have generally been transitory.

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More recently attempts at chemical sympathectomy have been utilized with some success. Dibenamine (dibenzylbetachloroethylaminohydrochloride), which blocks the terminations of the sympathetic motor pathways in smooth muscle, tetraethylammonium chloride and hexamethonium bromide, which are ganglionic blocking agents, all produce a peripheral vasodilation. However, unpleasant side effects have limited the usefulness of these drugs. Priscoline (2 benzyl 4,5 imidazoline hydrochloride), an adrenergic blocking agent, is probably the most widely employed medical means of treating peripheral vascular diseases at this time.

In 1948 Mufson et al.[2] demonstrated by radiosodium diffusion studies that the intra-arterial injection of histamine into the femoral artery resulted in a pronounced increase in the flow of blood to the lower extremity in certain peripheral vascular diseases. His purpose in administering histamine was to reopen the completely or partially closed blood vessels and the reestablishment of an adequate circulation. This, it was found, could often be accomplished by the primary fixation of histamine in the blood vessel walls of the affected extremity with little or no dissipation into the general circulation when the histamine was administered slowly. The histamine was then destroyed by the histaminase present in the tissues.

In an effort to produce a prolonged histamine effect Mufson[3] devised a drop-by-drop method of infusing histamine solution into the femoral artery. This consisted of diluting in 500 c.c. of normal saline 1.38 to 2.75 mg. of histamine acid phosphate (equivalent to 0.5 to 1.0 mg. of histamine base), and infusing this solution into the femoral artery under positive pressure by a manometer. (See Figure 1).

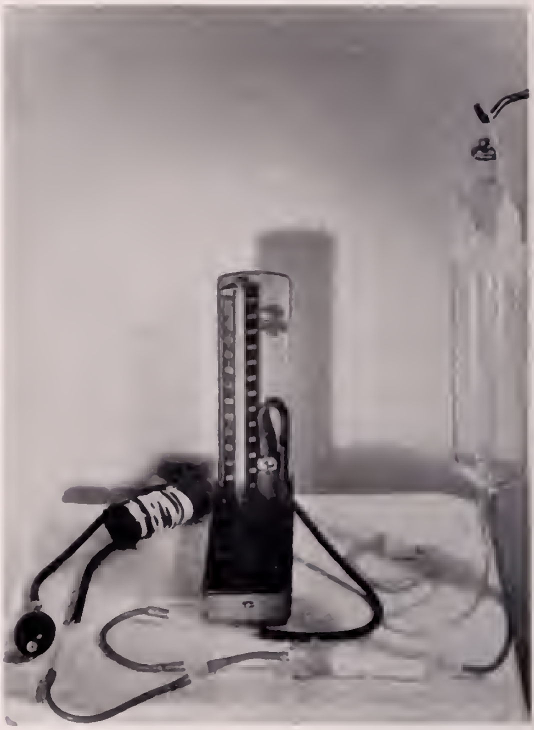

FIG. 1

Histamine, a decarboxylation product of the amino acid histidine, is rapidly destroyed when administered parenterally. Symptoms produced by too rapid administration of histamine are a metallic taste, a rapid drop in blood pressure, vasodilation of the skin vessels, intense headache, visual disturbances, bronchial constriction, dyspnea, and in several cases, shock.

Because of the time and nursing care involved when histamine is administered by the Mufson technique, a simple method was devised by one of us (J.F.F.) whereby a histamine solution may be injected into the femoral artery in approximately fifteen minutes.

This method employs an ordinary 50 c.c. syringe to which has been attached a two-way stopcock to facilitate the attachment of a piece of rubber tubing approximately one-eighth inch in diameter and twelve inches long. A glass adapter is attached to the other end of the rubber tube and to the adapter is attached a 2-inch, 22 gauge, short bevel needle. (See Figure 2).

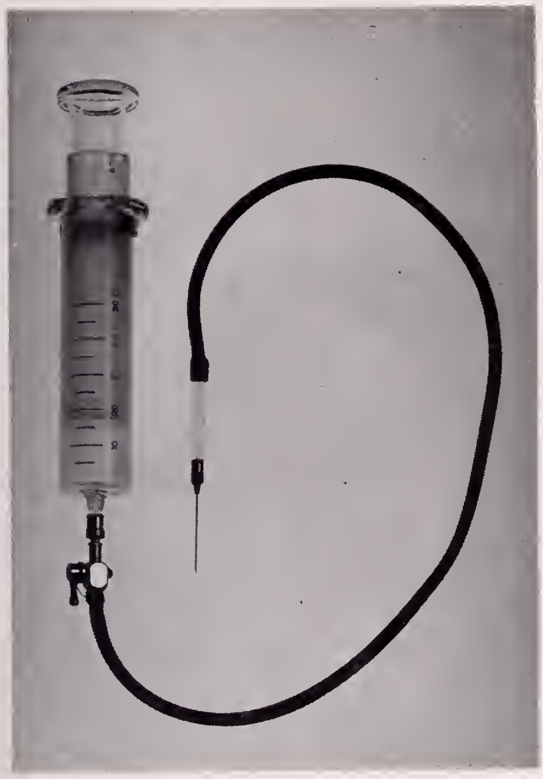

FIG. 2

Varying amounts of histamine may be injected into the femoral artery with this apparatus. Generally, as in initial dose, 0.25 to 1.0 mg. of histamine base in 50 c.c. of physiologic saline is injected in 15 minutes and the amount of histamine used subsequently depends upon the patient's response to the initial injection. In most of the cases treated in this report the interval between injections was 48 hours.

The skin over the femoral artery to be injected is sterilized and then infiltrated with 1% procaine solution. The femoral pulsation is located and the artery is fixed between the index and middle fingers to minimize mobility of the vessel, and the needle is directed perpendicular to the artery. A pulsating thrust of bright red blood into the glass adapter indicates entry into the artery. An immediate or delayed erythema usually results from histamine infusion.

Before histamine is administered to a patient one should especially inquire as to a past history of peptic ulcer, bronchial asthma, coronary artery disease, and histamine cephalgia. While receiving histamine the patient should be supine. In the event an excess amount of histamine solution escapes into the general circulation a vasodilatation will result with a drop in blood pressure and syncope may ensue if the patient's head is elevated. This has not been experienced with the patient flat in bed. Side effects during the use of histamine have been found to be directly proportional to the rate of injection. Almost no unpleasant reactions have been experienced when the histamine solution has been injected over a fifteen minute period. Epinephrine, a specific histamine antagonist, should be available when histamine is administered. In the experience of the authors, in over 350 histamine infusions, the use of epinephrine has not been necessary. Wold[4] cites one case of thrombophlebitis resulting from trauma to the vein in the course of an arterial injection.

Thirty-five patients with peripheral vascular disease have been treated by the method described above during the past eighteen months. There were 19 male and 16 female patients in the present study, whose ages ranged from 49 to 77 years. The duration of disease varied from twelve hours in the case of a popliteal arterial embolus to twenty years in a leg ulcer due to arteriosclerosis obliterans. The number of intra-arterial histamine injections varied from 1 to 40, the latter being the greatest number of injections administered to a single patient.

Of the 35 cases treated, arteriosclerosis obliterans was present in 18 cases, 9 patients presented stasis ulcers due to venous disease, 3 had experienced arterial embolism of the popliteal artery, and 1 was treated for immersion foot. Three patients were treated with lesions in which, it was believed, peripheral vascular disease may have been a contributing factor, although a definitive diagnosis could not be made. There were 14 cases of diabetes mellitus among the cases treated.

Although there are no controls in the present series, most of the patients treated may justifiably serve as their own controls because of their failure to respond to other accepted therapeutic measures. No effort was made to select cases in this study.

Case reports of five of the patients treated

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are presented. The results were satisfactory in each case. They were selected because, it is believed, the value of intra-arterial histamine is clearly demonstrated in each of the five patients reported.

Case 1. P. S., a 58-year-old male, complained of pain in the right thigh and buttock, precipitated by walking one-half block. The duration of this complaint was three years. X-rays revealed marked calcification of the vessels of the thigh and pelvis. The diagnosis was arteriosclerosis obliterans. Treatment with Priscoline for six weeks increased walking tolerance to five blocks. Immediately after one injection of histamine into the right femoral artery the patient could walk fourteen blocks without experiencing intermittent claudication. When seen six months after the initial injection, walking tolerance had not diminished.

Case 2. G. W., a 73-year-old male diabetic, was admitted to the clinic with complaints of rest cramps and intermittent claudication of the right leg of one year's duration, precipitated by walking one and one-half blocks. The diagnosis was diabetes mellitus and arteriosclerosis obliterans. Priscoline partially alleviated the rest cramps but did not improve claudication. Two intra-arterial injections of histamine were given with complete relief from rest cramps, and the patient was able to walk more than ten blocks without claudication. Over a period of one year one additional histamine injection has been administered to maintain this improvement.

Case 3. J. B., a 62-year-old male diabetic was admitted to the hospital in August, 1949, with a draining sinus, of four month's duration, on the fourth toe of the right foot. The diabetes was well controlled and conservative treatment with antibiotics and Priscoline failed to improve the condition of the toe. The patient was then given three intra-arterial injections of histamine at forty-eight hour intervals. Following the second injection the sinus ceased draining, and twenty-four hours after the third injection the crust was removed from the site of the sinus. The toe had completely healed and the patient was discharged after twenty days of hospitalization.

As an outpatient, five intra-arterial injections of histamine were administered at intervals of two weeks and Priscoline was continued by mouth. The patient had no further difficulty six months after the last histamine therapy.

Case 4. A. M., a 69-year-old diabetic female, was admitted to the hospital with lymphangitis of the right foot and a draining sinus of the third toe, of one month's duration. Conservative therapy and control of the diabetic state failed to result in improvement after one month of hospitalization. A second X-ray of the foot revealed osteomyelitis of the involved toe and marked calcification of the vessels of the foot. The toe was disarticulated. The surgeon noted that no bleeding occurred at the operative site and stated that possibly a more extensive surgical procedure may be necessary.

Histamine therapy was begun two days after the disarticulation, with the patient receiving three injections of histamine in the right femoral artery. On the eighth post-operative day the wound was completely healed.

The patient returned to the hospital six months after discharge, when following trauma, she developed cellulitis of the right foot and early gangrene of the fourth toe. X-rays showed the presence of osteomyelitis involving the proximal phalanx of the fourth toe. In an effort to aid post-operative healing, eight injections of histamine were administered prior to disarticulation of the involved toe. Osteomyelitis of the fourth metatarsal developed and metatarsalectomy was performed, followed by intensive histamine therapy. Histamine was administered daily for ten days and then every fourth day for three additional injections. Two months after the last operative procedure the patient was discharged from the hospital with complete healing of the operative site.

Case 5. D. M. was a 60-year-old white male who had had a left mid thigh amputation. After learning to use a prosthetic device he developed rest cramps and claudication in the right leg precipitated by walking one block. The diagnosis was arteriosclerosis obliterans. Priscoline could not be taken because of undesirable side effects. One intra-arterial histamine injection completely relieved the rest cramps and increased the walking tolerance to six blocks. The patient has not attempted to walk a greater distance. No rest cramps or claudication have been experienced three months after the initial injection.

Discussion

Of the 35 cases treated with intra-arterial histamine the best results have been evident in treating rest cramps and claudication, in which 10 of the 13 cases experienced moderate to complete relief. Seven patients with arteriosclerosis obliterans who had rest cramps and claudication as the only symptoms of their disease required one to two injections to render them asymptomatic for a period of four to twelve months.

Of the 9 stasis ulcers treated, 3 healed promptly and have remained well for periods up to fifteen months. Another healed completely but recurred after three months and has not been under our care since that time. In two cases the results were equivocal and three ulcers were not benefited.

In 6 ulcers of the toes due to arteriosclerosis obliterans, 4 were completely healed and have either remained healed for a period up to fourteen months or have developed mild recurrences which responded promptly to further therapy. The results were equivocal in 2 others.

Three arterial emboli of the popliteal artery were treated and were complete therapeutic failures. Improvement resulted in one case of immersion foot but could not be attributed entirely to histamine. The 3 patients for whom a definite diagnosis was not made are classified as therapeutic failures.

The authors believe that the method described offers a safe, simple adjunct in the treatment of peripheral vascular disease. During the course of 350 intra-arterial injections, the majority in patients over 60 years of age, no serious side effects have been observed. An attempt was made to avoid unpleasant systemic responses by slow administration. However, the fact that each treatment usually extends over a period of only fifteen minutes indicates that this method may be used as an office procedure with facility. Femoral arterial puncture is a relatively simple procedure, is well-tolerated by the patient, and no complications have arisen therefrom in our experience.

Summary

1. A new simplified technique for the administration of intra-arterial histamine is described.

2. Three hundred and fifty injections have been accomplished without serious side effects. It is recognized that histamine is a potent vasodilator but unpleasant side effects may be avoided by judicious use.

3. The authors believe that this method represents a useful adjunct in the treatment of certain peripheral vascular diseases. Our conclusions are based primarily upon clinical evaluation rather than experimental studies.

4. The intra-arterial route in the treatment of peripheral vascular disease should be further investigated, utilizing control studies.

5. From experience in the use of intra-arterial histamine, the authors believe that smaller doses of histamine base may be just as efficacious as doses up to 1.0 mg. and would recommend that 0.25 mg. of histamine base be used for the initial injection. Further dosage may be gauged by the response to the initial treatment.

6. The present method of administering histamine precludes the danger of arterial air embolus.

The authors are indebted to L. B. Flinn, M. D., Director of Medicine and L. C. McGee, M. D., Chief of Medical Service, Delaware Hospital, for their helpful suggestions in the conduct of this study.

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CLINICAL VALUE OF VENOUS PRESSURE MEASUREMENTS

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The measurement of venous pressure is useful clinically as an aid in diagnosis. Interest in the past has centered chiefly on its usage in instances of heart disease particularly in confirming the presence and following the progress of heart failure (2, 3, 4, 5). Results of venous measurements, in turn, have brought about reevaluation and debate concerning the mechanisms of heart failure. With increased investigations there have been refinements in technique, as well as an appreciation that the determination of venous pressure is of value in the diagnosis and study of numerous conditions. Various aspects of venous pressure, the methods of determination, and the clinical significance of changes in venous pressure will be discussed.

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NORMAL PHYSIOLOGY OF VENOUS FLOW AND VENOUS PRESSURE

An understanding of the normal mechanisms contributing to existing pressure in the veins is essential before discussing the possible value of venous pressure measurements. The initial force to the flow of blood in the systemic veins is imparted by the contractions and propulsive action of the heart and arteries (6, 9). Pressure in the veins, therefore, represents in a large part the energy imparted to the flow of blood by the ejection from the left ventricle into the aorta, this energy being progressively dissipated in overcoming the frictional resistance of the vascular channels.

The venous pressure is also varied depending on the amount of blood delivered from the arterioles. If the arterioles are widened, this pressure is increased. This is modified to a large extent by the ability of the small venules to dilate and adjust themselves to the amount of inflowing blood, and thus, little variation in pressure may occur (6, 8, 9). The reverse also occurs and upon constriction of the arterioles, the capillaries and venules through the same humoral and nervous mechanisms that alter arteriolar tone, reduce their capacity and hereby maintain pressure (6, 8, 9). At the other end of the circulation, venous pressure also tends to be stabilized because of the capacity of the heart to alter cardiac output in relation to wide variations in venous return.

Another important propulsive force is afforded the systemic venous flow by the tone and intermittent contraction of the skeletal muscles (3, 5, 9). The venous valves are so arranged that such pressure exerted on the veins produces a blood flow only in the direction of the heart.

A major influence affecting venous pressure and venous return is the intrathoracic pressure (3, 5, 7, 9). In inspiration, the pressure inside the thorax is actually less than atmospheric pressure by approximately 6 mm. of mercury, and during expiration, may amount to as much as minus 2.5 mm. of mercury. If the positive pressure in the vein is added to the negative pressure in the thorax, the total pressure directed forward toward the heart will be obtained. This is called the "effective" venous pressure (3). Therefore, inspiration decreases venous pressure since it increases "effective" pressure, whereas expiration decreases "effective" pressure and causes a rise in systemic venous pressure.

The gravitational effects on the venous circulation are very great since they act as a hydrostatic influence on the venous pressure. The right artrium is generally accepted as that point at which gravity has no influence on the venous pressure (3, 5, 8). At any point above this, gravity aids the veins. At any point below this level, however, the venous pressure recorded represents in part the weight of the column of blood interposed between that point and the right atrium. The effect of gravity is normally counterbalanced by nervous vascular control, intramuscular pressure, muscle contraction, intra-abdominal tension, and the system of venous valves (8).

THE MEASUREMENT OF VENOUS PRESSURE

Despite the numerous variables affecting pressure some of them, at least, must counterbalance each other in an effective manner since venous pressure tends to be surprisingly constant in normal subjects. The technique of measurement tends to eliminate other variables. To avoid alterations due to exercise the patient is made to rest in bed 15 to 30 minutes prior to the test (3). The test is performed in the supine position with the arm at an angle of 45 degrees with the body and in such a position that the antecubital vein to be used is at, or just below, the level of the right atrium. Attention to this position of the arm eliminates collapse of the vein from elevation and avoids any tendency to compression or torsion of the axillary or subclavian vein from too much abduction or adduction of the arm (3). Alterations due to muscle tension are diminished by having the patient relax as fully as possible. The effects of intrathoracic pressure are to be avoided by having the patient breathe easily and regularly. Sighing, coughing, straining, temporary apnea, and talking prevent accurate evaluation of the venous pressure (2).

The supine position minimizes the effect of gravity. The hydrostatic factor should be entirely eliminated by the use of a level for reference of the venous pressure measurement at which the hydrostatic pressure is zero. Many different zero levels have been used, so that various normal pressure values are reported (2, 3, 4, 5, 7, 8, 10, 11). These disagreements are unnecessary since the selection of the zero level has made no practical difference. Except that the results have to be evaluated individually and are not interchangeable, they are none the less valid for each technique. The zero reference recommended by Lyons, Kennedy, and Burwell (3) at a point 10 Cm. from the skin of the back in the supine position has much to favor it and is the basis for the pressure values mentioned in this discussion. This level closely approximates the level of the right atrium and the values correspond closely with those obtained in a careful study of the problem of eliminating the hydrostatic factor (12).

For all practical purposes, measurement of venous pressure is limited to the peripheral systemic branches. Determinations of pressure in the pulmonary and portal circuits do not fall in the realm of every day, practical usage. The caval system, however, is readily available and three general techniques of measurement have been employed: clinical inspection, the indirect method, and the direct method.

METHOD OF CLINICAL INSPECTION

Suitable superficial veins are selected for inspection, but this technique is useful only when the pressure is greater than normal, so that the veins are abnormally distended (7, 8). Of the superficial veins, the external jugulars are widely employed for inspection. In a normal patient in a semi-sitting position these veins are not filled above the plane of the manubrium (13). Abnormally high pressure, at least in the superior vena caval system is indicated if distension occurs above this level. Together with an enlarged liver, with or without peripheral edema, this finding usually represents a generalized increase in venous pressure, such as in congestive failure.

As early as 1904 Gaertner suggested that when an extremity is elevated its veins represent a manometric column in communication with the right atrium (7, 14). With the patient relaxed and sitting quietly the arm is slowly raised and the superficial hand veins are inspected for collapse. The distance from the point of collapse to the fourth interspace (taken as the plane of the right atrium) is a rough measurement of venous pressure and is normally equivalent to 100 mm. of water.

The veins on the undersurface of the tongue can also be employed in estimating venous pressure (15). Normally, these veins are found to be collapsed with the subject in a sitting position, but are obviously distended with pressure above 200 mm. of water.

Superficial vein inspection is to be taken only as a rough guide. When the findings are positive it is fairly safe to conclude that the venous pressure is elevated. However, it is not safe to say that the pressure is within normal limits when the findings are negative since many patients with heart failure may have a high venous pressure when supine and normal venous pressure when sitting (2, 5). Inspection, also, is of no value in the presence of sclerotic vessels since these do not readily distend or collapse.

Inspection is a more reliable diagnostic aid in the detection of localized venous obstruction (7, 8). The pattern and distribution contrast greatly with the normal areas. Care must be taken, of course, to recognize the anatomic variations and the differences in visibility of veins in normal individuals. The veins should be distended and not merely visible. Likewise it should be remembered that distension of superficial veins more frequently is a reflection of obstruction in deeper veins.

THE INDIRECT METHOD

This method depends on the principle that the measurement of the pressure necessary to collapse a vein, when exerted on that vein wall, is equal to the intraluminal pressure and should represent the venous pressure (16). A transparent capsule is sealed over a superficial vein and air is introduced until the point of collapse, at which point the pressure is read from a connecting water manometer. The method is inaccurate because of difficulties in employing the apparatus, the errors introduced in the presence of sclerotic or deep vessels or vessels with hypertonus of the wall, and is of no value clinically.

THE DIRECT METHOD

The direct method is the technique most popularly employed when greater accuracy is needed than that afforded by clinical inspection. A great number of instruments have been devised for this purpose (3, 5, 10, 17). The principle of the method is to measure the venous pressure directly by inserting a needle into a vein which is suitably connected to a water manometer. Readings are made from the manometer, most systems employing saline, and are expressed as mm. of saline. The position of the patient and other details in preparation have already been described. Any accessible vein can be employed for direct measurement. The antecubital vein is usually selected in the arm. The best vein for comparison in the lower extremity is the femoral vein (18).

NORMAL VALUES IN DIRECT DETERMINATION OF VENOUS PRESSURE

Various values have been reported as normal (3). The lack of uniformity in the selection of the zero level for reference of the measurements is mostly responsible for the variations and has already been discussed. When using a zero level 10 Cm. from the skin of the back in a supine position, the range of normal is found to be 50 to 150 mm. of saline (3). Femoral vein pressure in a normal individual is about equal to or slightly higher than the pressure of the antecubital vein of the same individual (4, 18). There appears to be little difference between venous pressures in children and in adults (19).

With exercise, venous pressure rises from 20 to 50 mm. of saline in a normal subject, and returns to or slightly below the initial level within 30 seconds after stopping the exercise (20). In congestive failure, it rises to higher levels upon exercising and gradually reaches the initial level more slowly (20). This appears to occur even when the resting venous pressure of a cardiac patient is normal. When there is local obstruction to venous flow, exercise of that part causes a progressive rise in pressure of the local veins and the return to the resting level is also slow.

Intrathoracic changes alter the venous pressure in the normal individual (3) and have already been pointed out, in general. Quiet inspiration causes a decrease in pressure of about 5 mm. of saline, greater drops occurring with the Muller experiment (resisted inspiratory effort from the expiratory position of the chest 3, 7). Expiration increases the venous pressure by about the same amount, 5 mm. of saline, and a greater increase occurs with the Valsalva experiment (resisted expiratory effort from the inspiratory position of the chest 3, 7). An unusually deep or sighing respiration may cause a drop of 5 to 40 mm. of saline.

Infusion of 500 to 1500 cc. of normal saline or 5% glucose solution causes an increase in venous pressure only if more than 20 cc. per minute is administered (7).

In normal individuals, pressure in the right upper quadrant of the abdomen for 1 minute produces no change in venous pressure or a slight fall (2, 5, 21). This is explained by considering that the reduction of blood delivered from the inferior vena cava brings about better emptying of the superior vena cava. In patients with congestive heart failure, such pressure on the abdomen produces a rise in venous pressure of 10 mm. or more, even though the resting pressure may have been normal (1, 2, 5, 21). In this case, it is believed that the increase in arm-vein pressure results from the fact that abdominal compression quickly increases the return of blood from the viscera through the inferior vena cava, especially from the liver. This increased load competes with the blood delivered from the superior vena cava. The increased venous return is not adequately handled by the failing heart and the stagnation in the superior vena cava is reflected by the increase in pressure in its tributaries (1, 2, 5, 21). This observation has been termed the "hepato-jugular refux" phenomenon. When the superior vena cava is obstructed, pressure in the abdomen also causes an increased arm-vein pressure, but the mechanism is different. In this instance, compression of the abdomen impedes the flow of blood to the inferior vena cava, which in this syndrome is the main route for ingress of blood from the superior vena caval system.

CLINICAL SIGNIFICANCE OF CHANGES IN VENOUS PRESSURE

The normally functioning venous system

may be affected by many conditions that can cause either local or generalized alterations. The alterations may consist of an elevation or a depression of the normal venous pressure. The aid of venous pressure measurements is employed in obtaining more accurately the deviations from the normal. With the fundamental understanding of the mechanisms governing venous flow and venous pressure, the recognition of the underlying condition causing an alteration becomes logically established. The various possibilities will now be discussed.

A. Local Increases in Venous Pressure. Many disorders, acting by interference with venous blood flow, produce localized increases in venous pressure with no alteration of such pressure in the non-affected areas. The effects produced depend upon the anatomical distribution of the involved vein. Obstruction of the inferior vena cava, for example, produces a distinct increase in pressure above normal in the leg veins in contrast with normal pressure in the arm veins. The impediment to blood flow can result readily from tympanites, abdominal compression with a binder, pregnancy, ascites, thrombosis, ligation, tumors pressing or invading the vessel, enlargement of the right lobe of the liver due to a congenital cyst, an echinococcus cyst or a solitary abscess, or to a right subphrenic abscess (8). Bilateral thrombosis, or other obstruction of the femoral or iliac veins, will give the same findings of that of inferior venal caval obstruction: elevated pressure of the leg veins with normal venous pressure elsewhere in the body.

A very dramatic example of local increase in venous pressure is seen in the superior vena caval syndrome. The principal causes of obstruction of the superior vena cava without obstruction of the inferior vena cava, are aneurysms of the aortic arch, bronchogenic carcinoma and mediastinal lymphoma; less frequently being produced by metastic carcinoma of the mediastinal lymph nodes, primary thrombosis, and mediastinitis (27). This obstruction results in a significantly higher venous pressure in the antecubital veins, plus a demonstrable, temporary, added increase upon exercise of the extremity with a slow, gradual return of the pressure to a resting level. Femoral venous pressure remains normal if there is no impairment of the inferior vena cava (27, 28). Twenty of thirty-five cases of superior vena caval syndrome studied showed antecubital venous pressures equivalent to 300 mm. of normal saline or more (27). Higher pressures result if obstruction occurs below the level of entrance of the azygos vein, since in such a case the azygos cannot serve as part of the collateral circulation (8). Pressure upon the right upper quadrant causes an added increase in venous pressure as already described.

Apart from the above situations, which result in a bilateral reflection of the obstruction, any condition that impedes the venous flow from an extremity will produce a rise in venous pressure above normal in that extremity with no alteration in the systemic venous pressure. Normally, venous pressures taken simultaneously in both arms will not differ by more than 10 mm. of saline (28). With obstruction of the venous return in one arm, the difference in venous pressure ranges from 20 to 30 mm. to 300 mm. or more of saline (28). The main local causes of obstruction of the axillary and subclavian veins are malignant neoplasm (usually intrathoracic), thrombosis secondary to heart failure, and thrombosis secondary to trauma or effort of the arm and shoulder (8). Obstruction of one innominate vein without obstruction of the other may result from the same causes producing the superior venal caval syndrome. Unilateral conditions involving the pleural cavity, such as thoracoplasty, hydrothorax and pneumonthorax, can increase the venous pressure in the corresponding extremity due to the increase in the intrathoracic pressure (11).

Obstruction of one femoral or one iliac vein will produce increased venous pressure in that leg, though it may not be evident until the extremity is exercised, with normal pressures recorded in the other extremities (29). Obstruction to a lower portion of the jugular venous system can produce an increase in venous pressure in that area only with normal pressures elsewhere. In cases of arterio-venous fistulas in any region, the pressure in the vein near the fistula is increased, but the systemic venous pressure is normal in the absence of cardiac failure (30).

B. Generalized Increases In Venous

Pressure. Venous pressure measurements have been most extensively used in congestive failure, with abundant evidence of their value in this condition (3, 4, 5, 11, 32). In right ventricular failure alone, and in combined cardiac failure, an elevation of pressure in the systemic veins occurs above the upper limit of normal of 150 mm. of saline, with common measured levels of 200 mm., 300 mm., and more. The added increases occurring with exercise and with pressure on the abdomen have already been mentioned. Left ventricular failure, in itself, does not increase the pressure in the caval system (1, 2). In many instances of improvement under treatment of right ventricular failure, the decrease in edema and hepatomegaly may lag behind the return of the venous pressure to a normal level, and confusion may result if earlier measurements were not taken (2, 5). Cases of mild heart failure may present persistently normal venous pressures at rest (5). In these instances, compression of the abdomen shows an increase in venous pressure to 10 mm. or more. Even though the physical signs of right ventricular failure may not be striking, the venous pressure may be quite high if it is measured during rapidly progressing failure (8). Exercise, also, causes marked elevation above normal. It must be extremely rare to find cases of persisting right ventricular failure in which the determination of venous pressure, including abdominal compression, is entirely normal (8).

Chronic constrictive pericarditis characteristically produces marked dilatation of veins and striking increase in systemic venous pressure. The elevation is persistent and high, from above 150 mm. to 400 mm. or more. The pressures may fluctuate but do not return to normal, and the pressures in the arms and legs are not notably different, except in the presence of considerable ascites (23).

Acute compression of the heart, caused by pus, sterile exudate or blood, because of its sudden onset and shorter duration causes less marked dilatation of the superficial veins and a peripheral venous pressure reaching about 200 mm. of saline (8). In both acute and chronic cardiac compression, the high peripheral venous pressure results from mechanical interference with the diastolic dilatation and filling of the heart and not from heart failure per se.

Increase in venous pressure, reaching a level of 200 mm. or more in severe cases, is a constant circulatory finding in obstructive emphysema (1, 24). This results not from heart failure but from the striking increase in intrathoracic pressure that results fom the disease. Right sided heart failure, however, may ensue and be superimposed on the basic pulmonary disease.

Systemic venous engorgement without pulmonary congestion is considered by some to be a distinct entity called Bernheim's syndrome (8). The belief is that the effects are brought about not by right ventricular failure due to myocardial weakness, but from obstruction to blood flow through the right ventricle because of displacement of the interventricular septum, owing to marked left ventricular hypertrophy and dilatation from such conditions as hypertension, aortic valvular disease and mitral valvular disease (25). The diagnosis is suggested when a patient with left ventricular hypertrophy shows signs of right ventricular failure, with minimal or absent signs of pulmonary congestion. The circulation time may remain within normal limits for considerable time, whereas the venous pressure is appreciably elevated (25).

Elevated pressure in the antecubital and saphenous veins has been observed in patients with varicose veins when they assume a recumbent position (26). It has been postulated that this results from an increase in blood volume that enables the patient to compensate for the effects of gravity when standing, but results in an overcompensated state when supine.

C. Decreases In Venous Pressure. Localized decrease in venous pressure may occur with thrombosis of a lateral sinus, reflected by a low or absent pressure in the corresponding internal jugular vein (8). Generalized decrease in venous pressure occurs in shock (peripheral circulatory failure) (6, 7). Systemic venous pressure depression may be found to be as low as 10-20 mm. of saline. It has been shown that in cases of shock there is a lowering of intramuscular and venous pressure before the values for plasma volume and arterial blood are altered (31). Venous pressure determinations, however, are not required for the diagnosis of shock; in fact, the diminished pressure and collapsed state of the veins frequently make it difficult to insert a needle for venipuncture for any purpose.

Slight temporary depressions in venous pressure levels may occur normally in a number of procedures: abdominal compression in the normal subject, the Muller experiment, and hyperventilation. These are of no clinical significance, being minor and temporary, and it is important that they be not misunderstood (3, 4, 5, 10, 11).

SUMMARY

1. Venous pressure measurements are an aid in the diagnosis and study of alterations in normal venous physiology. Though principally employed in the past in relation to congestive heart failure, they are of value in numerous other conditions.

2. The technique of venous pressure measurement is discussed and normal values are presented.

3. The clinical significance of deviations of venous pressure from the normal is briefly reviewed, with emphasis on local and general alterations.

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CLINICOPATHOLOGIC CASE RECORD

DAVID A. LEVITSKY, M. D.,*
ROBERT C. MERRILL, M. D.,*
and
PARK W. HUNTINGTON, JR., M. D.,**
Wilmington, Del.

PRESENTATION OF CASE***

DR. LEVITSKY: This 53-year-old, Negro male farmer was admitted to the Medical Service on September 28, 1950. He had been well until approximately three months before admission, when he began to notice periumbilical pain which radiated to the left costo-vertebral angle. The pain was precipitated by eating and would stop when he stopped eating. The pain gradually persisted until it became constant and it was most severe in the left costo-vertebral angle. It was worse when he was lying down and it was considered, by the patient, to be more severe than a dull ache. He obtained relief only by a ''needle''. There had been anorexia and he had a twenty pound weight loss over the past three months. Only one episode of vomiting had occurred, and this was productive of a white and green vomitus. There had been no nausea, tarry stools, blood in stools, change in bowel habit, chills or fever, burning on urination, or hematuria. Systemic review revealed nocturia twice nightly, and occasional headaches. The remainder of the systemic review was negative.

Past medical history: In September, 1950 the patient had an admission to a rural hospital where he was told he had ''gall bladder disease''. The patient stated that he had an occasional head cold when working in hay. No history of tuberculosis, kidney disease, venereal disease, or heart disease was obtained.

Family history: His mother died at the age of 86 years, of heart disease. His father died of unknown causes when the patient was six years old. No history of tuberculosis or diabetes was obtained.

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***Delaware Hospital Case No. 174505, presented at Staff Clinical Pathology Conference.

Physical examination: The patient was a well developed, asthenic, colored male, in no acute distress. Blood pressure was 130/90; temperature, 98.8°; pulse, 88; and respirations, 24. Examination of head and neck revealed greying hair, deviation of nasal septum to the left. Sclerae were not jaundiced, conjunctivae were of good color and pupils were equal and reacted to light and accommodation. Dental caries were present. Fundoscopic examination revealed normal fundi. The chest expansion was equal. There were no abnormalities to auscultation and percussion. The point of maximal impulse was in the fifth intercostal space in the midclavicular line. There was normal sinus rhythm and no murmurs were heard. On examination of the abdomen there was muscle guarding and tenderness in the epigastrium and periumbilical region. There was also slight tenderness and muscle guarding in the left flank. The liver and spleen were not palpable. There were no other masses palpable. The genitalia were normal. Rectal examination disclosed skin tags and normal prostate gland. No rectal masses were palpated. Only a few shotty inguinal nodes were present. Neurological and skeletal examinations were within normal limits.

Laboratory data: In addition to blood and urine studies given below, the BUN was 20 mg.%, serum amylase 180 mg.%, Mazzini negative.

Hospital course: On admission it was necessary to order demerol every four hours to control the patient's pain. An x-ray of the chest, abdomen and IV pyelogram showed no abnormalities. G.I. series and barium enema were within normal limits. During the hospital stay three benzidine and guaiac tests on feces were negative. Gastric analysis on the 6th day revealed no free acid and 20 units of total acid on fasting contents. Maximum values after test meal were 40 units of free acid and 84 units of total acid. No histamine was given. Urine culture showed a chloromycetin and aureomycin sensitive non-hemolytic staphylococcus albus and an enterococcus. On the 14th hospital day the feasting blood sugar was 190 mg.% and an ECG disclosed ST segment depressions in the limb leads. On the 21st hospital day, a lumbar puncture revealed clear, colorless fluid with less than one white cell per cubic millimeter. Initial pressure was 120 mm. Queckenstedt disclosed normal hydrodynamics. On the 22nd day the spinal fluid was cloudy, contained 386 white blood cells per cubic millimeter, 38 mg.% of protein, sugar 108 mg.%, chloride 660 mg.% and a negative Wassermann and colloidal gold curve. X-ray examination of the dorsal and lumbar spines showed slight lipping of the lateral borders of the lower lumbar vertebrae, otherwise the examination was normal. On the 23rd day the icterus index was 9 units, prothrombin time 86%, cephalin cholesterol and thymol turbidity were negative. Bromosulphalein was 5% retained after 45 minutes, acid phosphatase was 1.32 units, serum protein was 7.94 gm. with 4.02 gm. of albumin and 3.93 gm. of globulin. Urine was negative for bile. On the 24th day the patient was placed in a tub of hot water in order to induce muscle relaxation for an abdominal examination. Findings were muscle guarding in the epigastrium, and no masses were palpable.

The patient during his hospital stay, up to the 24th day, had lost 9 pounds. His temperature remained normal and pain had not been relieved after trials on post-Sippy diet with tr. belladonna, phenobarbital and gelusil; etamon; banthine; placebos.

The only relief obtained had been from demerol. On the 28th day a glucose tolerance test was performed.

		Urine
Fasting sugar	159 mg.%	2+
½ hour sugar	305 mg.%	2+
1 hour sugar	246 mg.%	2+
2 hour sugar	216 mg.%	1+

On the 30th day an operation was performed. Post-operatively the patient continued to have pain and was discharged November 6, 1950.

He was readmitted on January 17, 1951. He became progressively weaker and quietly expired on February 1, 1951.

Laboratory Studies

9/28/50	10/20/50	10/30/50
RBC: 3.8	4.5	4.0
Hgb: 12.9 gm.--82%	13.7 gm.--88%	12.5 gm.--80%
WBC: 5,900	7,200	4,800
Polys seg: 65%	60%	59%
Non seg: 0%	2%	0%
Lymph: 28%	34%	33%
Mono: 5%	3%	4%
Eosin: 1%	1%	4%
Baso: 1%		

Urine

	9/28/50	10/11/50	10/26/50
Color:	yellow-clear	amber	clear-amber
Sp. gr:	1.024	1.028	1.011
Reaction:	acid	acid	acid
Albumin:	Negative	Negative	negative
Sugar:	Negative	1+	negative
Acetone:	Negative	Negative	negative
RBS:	—	—	—
WBC:	3-4	1-2	0-1
Casts:	—	—	—

DIFFERENTIAL DIAGNOSIS

DR. MERRILL: The history as presented gives no definite evidence of infection being the primary cause of the patient's illness, although there are findings suggestive of secondary urinary-tract infection and findings suggestive of transient infection as reflected in the spinal fluid later in the patient's initial hospitalization.

A few of the more likely remaining diagnoses might include conditions such as gastric carcinoma, peptic ulcer, gall bladder disease, retroperitoneal tumor, and some form of pancreatic disease such as chronic pancreatitis or cancer of the pancreas.

Because of the insidious and progressive nature of the disease as described, one must necessarily accept a strong likelihood of some form of neoplastic condition eventually resulting in the demise of the patient. Along with this thesis are certain outstanding negative and positive findings such as marked weight loss and anorexia without frank gastro-intestinal symptoms, and the observation that the patient had definite symptoms and signs of a condition revealing few individual incapacitating findings referable to any specific symptom complex. The ubiquitous and extremely variable nature of cancer leads us to the latter conclusion. But let us examine a few of the possibilities already mentioned.

The possibility of "gall bladder disease" in the patient's history is noted. However, lack of colicky pain, specific food idiocyncracy, nausea and vomiting, jaundice, alcoholic stools, or other frequent accompanying features of the condition are a strong indication that such does not exist in this patient as a primary condition. And should acute perforation occur, perhaps with an associated pancreatitis, marked prostration, with an acute abdomen, leukocytosis, fever, etc. are usually present — too severe a condition to fit well into this patient's course of illness. Chronic perforation usually presents several of these symptoms but in a milder degree.

In considering peptic ulcer or gastric carcinoma, one must remember that there is a small percentage of such cases not detected by X-ray analysis (probably 5% of all ulcers and gastric carcinoma). As we well know, pain is the outstanding symptom of ulcer. It is almost invariably epigastric and may radiate through to the back and around the costal border. Presence of pain in the back suggests chronic perforation. However, the rhythm of the pain in this patient is certainly more suggestive of gastric carcinoma. But again, as in the case of gall bladder disease, there is absence of a true symptom complex including lack of evidence for bleeding in the gastrointestinal tract, at least occasional episodes of nausea and vomiting and definite evidence for hypo- or hyperacidity. Absence of occult blood suggests that the lesion is benign and although marked weight loss may occur in both conditions, true loss of appetite is more likely to occur in malignancy.

In general, the chronicity of peptic ulcer characterized by remissions and exacerbations with typical rhythmic pains is not the picture presented in this patient's history. On the other hand, the duration of the patient's symptoms, the course of his disease and the presence of certain important symptoms such as anorexia, weight loss, type of pain and the age of the patient are compatible with gastric carcinoma and it therefore, must be kept in mind in the final differential diagnosis. This should include possible metastatic lesions to the pancreas.

Retroperitoneal tumor is, unfortunately, a condition frequently neglected as a diagnostic possibility in such cases as these. Its possibility is suggested to me primarily because of lack of overt symptoms referable to any one organ system in this patient's history. However, there was no evidence shown for such abnormality on X-ray of the abdomen, pyelograms or GI series. One such case I have recently seen certainly would indicate that marked severity and variability of symptoms, frequently referable to the renal, intestinal and skeletal systems may be present without any specific indicative findings on physical examination or by routine laboratory studies. However, I do not suspect the condition in the patient, primarily in view of the pain precipitated by eating (initially), laboratory findings probably referable to the pancreas, no palpable masses and other negative findings.

In discussing disease of the pancreas, one should include acute and chronic pancreatitis and carcinoma of the pancreas. Acute pancreatitis is considered here because it may initially be insidious in onset and occasionally lead to the chronic form of the disease—compatible with the duration of the history as given.

Chronic pancreatitis may be conveniently divided into the intralobular and interacinal types but the primary change in both types is an increase in fibrous connective tissue. This, in turn, can be considered the result of a previous inflammatory condition or a degenerative process in the pancreas itself. Destruction of the parenchyma or occlusion of the ducts determine, to a large extent, the degree of dysfunction present. As in the case presented, there may be a history of gall bladder disease. Also the pain, as in this case, may be severe, constant or intermittent, in the epigastrium radiating around the costal margin or through to the back. Chronic weight loss, frequent tenderness over the pancreatic area and occasionally a diabetic condition of varying severity may be present.

A flat plate of the abdomen in this case, did not reveal pancreatic calculi. The one and only serum amylase computed was within normal limits and it was unfortunate that other calculations had not been done for comparison. The outstanding laboratory findings compatible with some form of pancreatic disease in this patient were his diabetic-like glucose tolerance curve (without family history of the condition) and a high feasting blood sugar. Chronic pancreatitis tends to involve the pancreas in toto, or, if we are to consider the severity of the condition in this patient, one would expect to find typical foul smelling, bulky, clay colored stools. Furthermore, chronic pancreatitis does not tend to disturb the endocrine function as frequently or as severely as its exocrine function.

Carcinoma is the most common of all tumors of the pancreas and as it usually involves the head of the pancreas it must be differentiated from carcinoma of the common duct and obstruction at its distal ostia. Such lesions usually give rise to acholic stools, nausea and vomiting, colicky pain, jaundice and frank liver damage. None of the foregoing can be said to be actually present as related in this patient's history. However 5% of carcinoma of the pancreas occurs in the body, etc. 2-3% may be confined to the tail, and 40-50% may be diffused or at least not confined to any one of the three major segments. Metastases, particularly to the liver and local lymph nodes, are frequent. Cancer of the pancreas also tends to occur in the middle and old age groups and is much more frequent in males. Pain is the most common and severe symptom in carcinoma of the pancreas, particularly when it involves the body. Its quality and location are certainly compatible with that described in the patient and considered here. Although one might expect steadily increasing jaundice, GI symptomatology, and possibly obstruction of the biliary tract, such is not absolutely necessary in diagnosing carcinoma of the pancreas nor was it clear as to the presence of these or other common symptoms or signs of the condition toward the latter part of his initial, and during his entire second hospitalization.

In my mind, the case presented must be diagnosed by viewing it in a general fashion only. Some of the essential findings are obviously withheld or unknown. I definitely feel that this patient had a primary disease of the pancreas. In view of the insidious progressive nature of this man's disease, correlated with anorexia, weight loss, and evidence of pancreatic damage, I believe that this man's primary condition was carcinoma of the pancreas, probably primarily or initially in the body segment. My second choice would be primary chronic pancreatitis. The third choice is the much less likely possibility of gastric carcinoma with metastasis to the pancreas.

Clinical Diagnosis

1. Carcinoma of the pancreas
2. Chronic pancreatitis
3. Gastric carcinoma with metastasis

Pathological Discussion

Dr. Huntington: Biopsy obtained at laparotomy on the 30th day showed an adenocarcinoma which was thought to be of bile duct origin; however, the exact differentiation between this entity and a duct carcinoma of the pancreas is not possible microscopically.

At autopsy an adenocarcinoma of the pancreas was found which appeared to originate in the head of the pancreas. This invaded the serosal surfaces of the duodenum, stomach, and transverse colon. The malignant process had also involved the esophogeal hiatus of the diaphragm and diffuse metastases studded the peritoneum. The liver contained numerous metastatic nodules measuring from 0.5 to 3.0 cm. in diameter, and the lungs were also diffusely studded with small nodular metastases. Microscopically the malignancy proved to be a duct adenocarcinoma of the pancreas.

Pathological Diagnosis

1. *Primary carcinoma of the pancreas*
2. *Carcinomatosis*

MEDICAL SOCIETY of DELAWARE
Amendments Adopted
BY-LAWS

The following Amendments for the booklet of By-Laws of the Medical Society of Delaware were adopted by the House of Delegates on October 8, 1951. Each member should make these notations in his copy of the By-Laws.

Item I

Page 10, Line 6 and Line 16, Article 3. Section 6 — Dues and Assessments. Change "April 1" to "April 30".

Item II

Page 18, Line 19, Section 9 — Transfers. Change "one year" to "six months". Section 10 Bottom Line—Transfer Cards. Change "Twelve months" to "six months".

Item III

Page 10, New Amendment to Article 3, Section 6 — Dues and Assessments. Active members of this Society shall be excused from payment of annual dues and special assessments of this Society as long as they are on active duty with the Armed Forces of the United States. Said members shall pay the dues for the year in which they are inducted into service, but shall not pay the dues for the year in which they are mustered out.

BOOK REVIEWS

Physical Medicine and Rehabilitation for the Clinician. Edited by Frank H. Krusen, M. D. Cloth. Pp. 371. Price, $6.50. Philadelphia: W. B. Saunders Company, 1951.

Twenty-four prominent authors, seventeen of whom are on the Mayo Clinic Staff, have contributed sections for this valuable volume on this new specialty of Physical Medicine and Rehabilitation. All the phases of this specialty are described as they would be applied by the average clinician in the care of his patients.

Treatment of any specific disease is not discussed in detail since the object of this book is to present the latest developments in physical medicine and rehabilitation. However. the various methods of electro-diagnosis are given in detail.

The Fundamentals of Anatomy, Therapeutic Exercise and Physiology as Related to Physical Medicine and Rehabilitation will be found very informative to physicians and medical students who are interested in getting a clear understanding of kinesiology and the application of corrective measures.

This book will be of particular value to the specialist in this field, the physiatrist, as well as the orthopedist who sees many of the patients with bone and joint diseases and deformities.

The Specialties in General Practice. Edited by Russell L. Cecil, M. D., with articles by fourteen contributors. Pp. 818, cloth. Price, $14.50. Philadelphia: W. B. Saunders Company, 1951.

This is indeed an encyclopedia of medicine for the use of the general practitioner. All of the specialties are covered in so far as the condition involved is within the ability and experience of the family physician. Postoperative care is also discussed when patients with major surgery are returned to the referring physician for after care.

There are fourteen chapters on diagnoses and treatments which are discussed in detail. The last and perhaps the most useful chapter for the family physician is the one on Psychiatry. The treatment of the mind is given in understandable language. Psychosomatic medicine, psychoanalysis, as well as the neuroses and psychoses, are effectively presented.

This book will be found very useful by every general practitioner and more so by those who are located in areas where convenient consultation with the specialist is not possible.

1789 — MEDICAL SOCIETY OF DELAWARE — 1952

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Vol. 24 January, 1952 No. 1

A. M. A. Dues for 1952

1. American Medical Association membership dues for 1952 are $25.00.

2. Fellowship dues for 1952 have been abolished.

3. American Medical Association membership dues are levied on "active" members of the Association. A member of a constituent association who holds the degree of Doctor of Medicine or Bachelor of Medicine and is entitled to exercise the rights of active membership in his constituent association, including the right to vote and hold office as determined by his constituent association, and has paid his American Medical Association dues, subject to the provisions of the By-Laws, is an "active" member of the Association.

4. American Medical Association membership dues are payable through the component county medical society or the constituent state or territorial medical association, depending on the method adopted locally.

5. Commissioned medical officers of the United States Army, the United States Navy, the United States Air Force or the United States Public Health Service, who have been nominated by the Surgeon General of the respective services, and the permanent medical officers of the Veterans Administration and the Indian Service, who have been nominated by their Chief Medical Directors, may become Service Fellows on approval of the Judicial Council. Service Fellows need not be members of the component county or constituent state or territorial associations or the American Medical Association. They do not receive any publication of the American Medical Association except by personal subscription. If a local medical society regulation permits, a Service Fellow may elect to become an active member of a component and constituent association and the American Medical Association in which case he would pay the same membership dues as any other active member and receive a subscription to The Journal of the American Medical Association.

6. An active member of the American Medical Association may be excused from the payment of American Medical Association membership dues when it is deemed advisable by the Board of Trustees, provided that he is partially or wholly excused from the payment of dues by his component society and constituent association.

The following may be excused in accordance with this provision: (a) members for whom the payment of dues would constitute a financial hardship as determined by their local medical societies; (b) members in actual training but not more than five years after graduation from medical school; (c) members who have retired from active practice; (d) members who have reached the age of 70, on request, and starting January 1 following the 70th birthday, and (e) members who are called to active duty with the armed forces (exemption begins July 1 or January 1 following entrance on active duty). The last two categories are excused from A.M.A. dues regardless of local dues exemptions.

7. Active members of the American Medical Association are not excused from the payment of American Medical Association membership dues by virtue of their classification by their local societies as "honorary" members or because they are excused from the payment of local and state dues. Active members may be excused from the payment of American Medical Association membership dues only under the provision described in Paragraph 6 above.

8. American Medical Association membership dues include subscription to The Journal of the American Medical Association. Active members of the Association who are excused from the payment of dues will not receive the Journal except by personal subscription at the regular subscription rate of $15.00 a year.

9. Members may substitute one of the special journals published by the Association for The Journal to which they are entitled as members.

10. A member of the American Medical Association who joins the Association on or after July 1 will pay membership dues for that year of $12.50 instead of the full $25.00 membership dues.

11. An active member is delinquent if his dues are not paid by June 1 of the year for which dues are prescribed and shall forfeit his active membership in the American Medical Association if he fails to pay the delinquent dues within thirty days after the notice of his delinquency has been mailed by the Secretary of the American Medical Association to his last known address.

12. Members of the American Medical Association who have been dropped from the Membership Roll for nonpayment of annual dues cannot be reinstated until such indebtedness has been discharged.

13. The apportionment of delegates from each constituent association shall be one delegate for each thousand (1,000), or fraction thereof, *active members of the American Medical Association* as recorded in the office of the Secretary of the American Medical Association on December 1 of each year.

In view of items 6d and 6e above, the following members, after approval of the AMA, will no longer pay AMA dues. Those marked (H) will also no longer pay State or County dues:

NEW CASTLE COUNTY

Banton, Conwell, Wilmington
Chipman, I. Lewis, Sr., Wilmington (H)
Compton, Arthur G., Wilmington
Downes, John R., Newark (H)
Ellegood, Robert E., Wilmington (H)
Ellis, Walter W., Delaware City (H)
Forrest, George W. K., Wilmington (H)
Gruver, Arthur B., Wilmington
Kraemer, William H., Wilmington (H)
LaMotte, William O., Sr., Wilm. (H)
Lewis, Dorsey W., Middletown (H)
Pearson, G. Burton, Wilmington (H)
Rovitti, Peter A. M., Wilmington (H)
Samuel, Meredith I., Wilmington (H)
Springer, Harold L., Wilmington (H)
Vaughan, Edward M., Middletown (H)
Ericksen, George N., Wilmington
King, John F. W., Wilmington

KENT COUNTY

Marshall, William J., Milford (H)

SUSSEX COUNTY

Allen, Ira A. B., Seaford
Beebe, James, Sr., Lewes (H)
Hocker, Ulysses W., Lewes (H)
James, Oliver V., Milford (H)
Marine, David, Rehoboth
Riggin, Howard S., Seaford
Schwedenberg, Theodore, Seaford

Your Executive Secretary is requesting the AMA to excuse the payment of dues for the above list en bloc, rather than require each member to make a personal request of them. Their answer will be published as soon as received.

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TUBERCULOSIS IN SMALL COMMUNITIES*

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Philadelphia, Pa.

As this topic is presented you should bear in mind the fact that historically tuberculosis has been a predominantly urban disease in the United States. It has taken its greatest tolls in the blighted areas of large cities where there is poor housing, poor nutrition, poverty, and where unfortunately in many places one finds a strong desire to expect government support — whether it be federal, state or local. As these improvements in housing and nutrition, better economic status, and uncovering of cases by means of photofluoroscopic surveys and the follow-ups by public health nurses and sanatorial or clinic care have become a reality in many cases, we have seen one of the most remarkable chapters in medical history in the reduction in mortality.

During recent years tuberculosis has been displaced as the leading cause of death in this country and now it stands in seventh place among the lists of causes of death. For example, in 1900 the death rate from tuberculosis was over 200 per 100,000 while in 1949 it was about 30 per 100,000. This is all the more remarkable when we realize that we still have no prophylactic agent such as a vaccine and no specific therapeutic agent.

Until such time as a specific preventive or curative agent is discovered the control of tuberculosis is a problem which is the concern not only of members of the medical and nursing profession but of every individual in the community. The concerted efforts of people in all walks of life should be directed to the purpose of stamping out this wide-spread communicable disease.

Tuberculosis mortality rates for the entire country are available for 1948. The highest death rate is in Arizona—82.4 per 100,000—due, of course, to the migration of tuberculosis patients to that state. Lowest rate is Iowa—9.5 per 100,000. The death rate for the state of Delaware was 39.7, which places it among the nine states having the highest rate.

Several aspects of tuberculosis incidence seem to have a direct bearing on the mortality rate. In addition to low standards of living and poor control programs, other conditions contribute to higher mortality rates. Of special importance is racial component of population. Death rates among non-whites are generally much higher than among whites. In 1948 the national death rate was 30 per 100,000 but among Negroes it was 76.3 and among Indians 143.2.

The hospitalization of tuberculosis patients always has a direct bearing on the incidence of the disease. Naturally if patients are isolated in hospitals there is less chance for them to transmit the disease to others. In this connection it has been noted that in those areas where most tuberculosis deaths occur in hospitals, there is less evidence of spread of the disease in the community.

Tuberculosis remains a major public health problem over the entire country. It is changing in its age distribution. It is a leading cause of death among those in their productive twenties, although the death rate from tuberculosis is now highest among males past sixty years.

Whether in urban or rural areas the plan for the control of tuberculosis must, of necessity, because of the character of the disease, be centered in the health authorities. It is the duty of health officials to keep a record of all individuals suffering from communicable tuberculosis, to provide facilities for the care of indigent tuberculosis patients, to conduct case finding programs, and to disseminate information which would increase the knowledge of tuberculosis among the laity. In addition,

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*Read before the Medical Society of Delaware, Dover, October 4, 1950.

**Director of Public Health, City of Philadelphia

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any well-organized program would provide for financial aid to the patient and his dependents and also for rehabilitation.

The task of controlling tuberculosis in rural America is made difficult by all the factors that impede the provision of general public health and medical services. As mentioned earlier but bearing repetition, we know that education, housing, nutrition and low income are most vital factors. The rural educational levels, which include education on personal hygiene and living habits, are much below the urban level.

The comparative level of nutrition — urban and rural — is rather difficult to evaluate. There is some evidence that in the economic depression this level was slightly better in the rural areas but less than one would expect, possibly because of the sale of food to secure more money. In the more prosperous period urban eating habits improve enormously and their use of the balanced diet may be — probably is — the result of health education in that very important subject.

It is thought safe to say that except for the increased opportunity for the person-to-person spread of tubercle bacilli in the cities, the conditions of rural life provide the basis for a higher mortality than do those of urban life. The 1940 census showed greater overcrowding in farm houses, the distances to be covered by the public health nurses are great in many areas, as is the distance to tuberculosis clinics and hospitals where pneumothorax is given, laryngeal examinations made and x-rays taken. Furthermore, the rural areas lose the benefit in many sections of the facilities of the voluntary and public health agencies.

In reducing rural tuberculosis the same measures as used in cities must be used—they are case finding, through the private physicians and mass surveys, public health tuberculosis clinics, hospitalization in sanatoria.

The striking results of mass x-ray surveys are being enjoyed mainly by the residents of large and medium-sized cities. In the latter the federal fund grants-in-aid are made on a matching financial basis with local funds. Even in rural areas where chest x-ray units from the health department arrive, the population surveyed will be mainly the residents of a county seat or urban center in the county. It is very difficult to reach scattered rural people with the necessary and recognized measures for examination and treatment. What is needed is the establishment of the local community health center by the state department of health.

In the urban areas the public health department has the benefit of assistance from the voluntary health agencies. The tuberculosis and health associations, which are probably the nation's best established voluntary health agencies, are strongest in the larger cities. There is a fine field for the establishment of these agencies in more of our rural areas.

When one finds a case of tuberculosis, whether in the rural or urban area, one has the problem of shortage of sanatorium beds. The existing shortage is due partly to lack of personnel — especially nurses. That is influenced by salary and lack of education. It is known that the incidence of tuberculosis among nurses is lower in the tuberculosis hospitals than in general hospitals. The public health nurses working with the medical profession are doing an outstanding job, yet more of them are needed in the field of tuberculosis work.

It must be further emphasized that the practicing physician is the key to a good system of reporting — his complete cooperation with his health officer is essential for success in stamping out tuberculosis. Similarly, we must stress case contact follow-up work by our nurses.

A well-organized program in a city has the following constituents:

1. A central case registry where the names of all tuberculosis patients are registered. This provides a means of information interchange with health departments in other localities for the patient who moves from place to place. It also provides a means of making certain that patients with active disease receive routine medical check-ups and follow-up nursing care.

2. Case finding programs, particularly by mass x-ray surveys, in which x-ray examinations are given to apparently healthy individuals. These examinations are made on 70 mm films and all patients who show evidence of abnormal shadows in the lungs are reexamined on large films. To make mandatory semi-annual x-ray and Wassermann exami-

nations of food handlers, industrial and domestic help — including hospital employees — is good public health.

3. Out-patient clinics are an essential part of any tuberculosis control program. There individuals may go for routine chest examinations and private physicians may refer their patients for study. A staff of public health nurses attached to these clinics make routine visits to all patients who are reported to the department of public health as having tuberculosis. These visits are for the purpose of making certain that the public health laws are being observed by the practice of isolation technique and also to insure or to impress upon the contacts the importance of having routine chest examinations. The clinics act as listing stations for patients in need of hospitalization or sanatorium care. They also serve as pneumothorax treatment centers.

4. Protection of the public by means of enforcing isolation of sputum-positive patients who are considered a menace to the public health because of their refusal to properly dispose of their sputum or use precautionary measures. These patients may be quarantined under the law and in Philadelphia between sixty and seventy patients in this category are confined to the Philadelphia Hospital for Contagious Diseases each year.

5. Public health information — This is exceedingly important in the control of tuberculosis. It can be done by trained public health workers, nurses, or physicians. It has for its purpose the dissemination of scientific information among the laity and stresses the correction of misconceptions and superstitions which concern tuberculosis and which have been handed down for generations.

6. Research — an important part of any tuberculosis control program — may be done by the health department either alone or in cooperation with other groups. In Philadelphia the health department has three tuberculosis research programs at the present time, as follows:

(1) The central cooperative clinic at Temple University which is a study of the course of patients with minimal tuberculosis, especially a research of those treated at home and those treated in institutions.

(2) A study in cooperation with the Henry Phipps Institute, in addition, as to the incidence and character of tuberculosis in members of the Negro race.

(3) A B.C.G. project in cooperation with the state department of health and the Henry Phipps Institute which is vaccinating newborns at the Philadelphia General Hospital with B.C.G. Thus far over 1,000 children have been vaccinated.

In attacking successfully, and that means effectively, the rural tuberculosis control, the following program is essential:

1. Improve rural housing.

2. Elevate the standards of education in the fields of general living, personal hygiene, and nutrition.

3. Make available to the community the services of experts and the general practitioner at local health centers and on educational programs. Facilities here for treatment must be provided.

4. Make available public health nursing personnel for follow-up and family education.

5. Have mass chest x-ray available.

6. Provide general hospital and sanatoria beds.

7. Last but not least, the cooperation with and active assistance from your local health and tuberculosis association in the form of opening rural area facilities.

It is important to state that since rehabilitation plays such an important part in tuberculosis control this part of the program must be developed and broadened. A recent study of 305 tuberculosis patients rehabilitated during a ten-year period draws conclusions which give tremendous possibilities in this field. Demonstration of official agencies of the intrinsic value of this phase of tuberculosis control is the next necessary step.

The bureau of rehabilitation is the principal source of vocational rehabilitation in the community. It is impossible to determine the extent to which the rehabilitation needs of tuberculosis patients are being met because there are no standards on which to base any estimate of the number of tuberculous patients needing vocational rehabilitation.

As stated previously, the family physician, wherever he may be, remains the key to tuberculosis control. The rural physician has an opportunity that is unsurpassed in the tuberculosis control program. His knowledge and insight into family history and its socio-economic conditions is an invaluable asset. The patient with a family history of tuberculosis is a number one suspect. The examination of all contacts is greatly simplified in rural practice. By increasing his level of suspicion for infection, he can bring about early diagnosis and treatment. His counselling to patients to accept newer diagnostic and treatment methods and to lay aside superstitions and unfounded beliefs can produce worthwhile results. His reports to the health department and the use of the public health nurse are the bases of success here. Finally, in calling upon and assisting lay leaders, the job of public education and case-finding by mass x-ray becomes greatly simplified.

In conclusion let me say that I have given you a broad public health presentation of rural tuberculosis, with a suggested program. May each of you be a brighter torch carrier for the eradication of this dread disease.

Discussion

Dr. F. I. Hudson (Dover): Dr. Reeves has brought us a good deal of valuable information today. If we follow some of the points that he has brought out here, I think we will be able to carry on a much better program here in Delaware.

I didn't intend to give Dr. Reeves the idea that we had a perfect program here in Delaware because we all know that there is plenty of room for improvement.

As far as our hospital beds are concerned, we have not had any large waiting list in the past year, but we have not been taking care of our childhood tuberculosis adequately. We have had a building at Brandywine Sanatorium which has not been in use, which could be used if funds were available. So we still need a lot of help as far as tuberculosis control is concerned here in the State, and certainly the suggestions you made, Dr. Reeves, will be helpful.

As far as cooperation of the physicians in the State is concerned, we have certainly had good cooperation over the years. The thing was all set up when I took over the job as State Health Officer, and I didn't have to do too much on that. I must add that there are very few deaths reported that have not been reported as cases before. That doesn't pose any big problem with us at all. I think that is a good sign because it does show that the physicians in the State recognize their responsibility in the care of these tuberculosis cases and in the prevention of the spread of tuberculosis.

Actually I might point out that Delaware is pretty low on the list when it comes to having a high mortality from tuberculosis. I have here figures from some years back. Of course, during the war the mortality rates ordinarily go up. In 1918 in this State we had a rate of 205 deaths per one hundred thousand population, which is a tremendous rate. That has gone down steadily. During the last war it went up just a little bit. It went as low as 48 in 1936 and up to 56 in 1941. In 1942 it was down a little bit, and in 1949 our rate still remained a little over 37 per 100,000 population, which puts us about eighth from the bottom — not from the top — when we compare ourselves with the other states in the United States.

Of course we have a good percentage of colored population. Our distribution of these deaths is mainly in the City of Wilmington, which has a pretty large colored population, which is a factor in that, and also in Sussex County. New Castle County proper and Kent County had much better rates over a period of time.

So we must apply our efforts in getting those groups who are highly infected under control.

I might state some of the improvements that have been made and the cooperation we got from the Anti-Tuberculosis Society. Just as an example, we established a clinical laboratory and bacteriological laboratory to do the work for both the white and colored patients in the sanatoria. They can do any type of work on t.b., including culture and animal inoculation. Any and all tests are given to patients in the sanatoria at this time. Funds for the equipment and supplies were supplied by the Delaware Anti-Tuberculosis Society, and they have been very helpful to us in many other instances.

One of our gross delinquencies is the care of surgical cases, which was mentioned here yesterday, and I won't go into that any further. But we do need more space to handle our surgical cases. The number of surgical cases we have is limited in this small State, and we feel from the state level that it doesn't pay us to operate a surgical unit at our sanatoria. So we send our cases to a general hospital that has that particular service available, and the operations are done there. We hope to continue that, but we need a few more beds at that hospital because we need to handle white males, females, and colored males and females, and we are not able to do that at the present time.

We have, on occasion, had to postpone operations until operation wasn't feasible at all, which is a bad situation. We hope that will be corrected within the next year.

We are asking for considerable funds from the next General Assembly in order to expand and improve our work in t.b., especially to improve the facilities at the sanatorium. As you know, we have an old building there, constructed in 1912, and it is getting quite dreary. It needs a good deal of repair, to say the least. A new building would be much better, but whether we can hope for such I do not know. The State Board of Health has just requested the United States Public Health Service, through their New York office, to assist us in doing a survey in order that we may have a better idea, an unbiased opinion as to what we should do further to improve our tuberculosis situation. I have also asked your friend, Dr. Hillbo if he wouldn't send Dr. Plunkett down. I expect you are familiar with Dr. Plunkett. We would like him to help us out in studying our proposed alterations and such in the sanatoria. They both promised to help us out and have someone down here in a few weeks.

We will certainly report on what the recommendations of these people are.

I want to thank you personally, Dr. Reeves, for coming down here. It is going to be a big help to us. I know these fellows and I personally understand much better what is going on in Philadelphia, and we all have the same problems.

Dr. V. D. Washburn (Wilmington): I think it can be agreed that it is considered the mission of a speaker always to speak not only instructively but interestingly, and if perchance he does those two things and also is able to inspire in the members of the audience a desire to profit by the experiences and the observations of the speaker, then surely he has discharged in full his obligation.

I say these things because it gives me the opportunity of expressing the opinion that you have done all of those things, and certainly, so far as I am concerned, it is so.

I think a most interesting point, not brought out here but which I believe is germane to the subject, was brought to our attention within the last few weeks by a speaker who came before our joint meeting of the Delaware Academy of Medicine of the New Castle County Medical Society. He came here from Massachusetts, and amazing to relate, referred to the fact that in the State of Massachusetts there was a very definite difficulty, and an increasing difficulty, to be found in the fact that in the training schools and in the general hospitals of Massachusetts, there was a trend and almost a determination to see to it that there should be no beds available in those general hospitals for tuberculosis patients, which to me meant two things. First, that that reflects definitely a failure on the part of the medical profession. As I look back over the by-laws of two or three hospitals in Wilmington, with which I am familiar, I can almost quote them and say that there shall be no patients admitted to this hospital who have pulmonary tuberculosis. Those rules and by-laws were always put together and usually came either from the American Medical Association, or the American College of Surgeons, and we legislated, and we are contributing to a fault in our overall program.

When we make it difficult for patients to be admitted, we present a temptation to the medical practitioner who may know that his patient has tuberculosis but considers that he is so ill that he is justified in admitting him for observation for some other disease. Secondly, by this policy, which is coming to light in Massachusetts, we are limiting very definitely the opportunity for the training in the schools of nursing. I speak of that, although not immediately germane to what you have talked about, but because it is important and worthy of the attention of all the members covering this entire State.

I think that it is most interesting, as we grow older, even though I am not trained in the field of public health administration, but certainly it is clear to any man, no matter what his training, that changes in emphasis and realization of the necessity of approaching these problems differently is reflected in public health administration in the fact that today, here and there, we are beginning a new policy. We are curiously enough developing housing programs under the supervision of the departments of health in various cities, and obviously it comes because with not poor housing but bad housing and terrible housing there arises not only a greater morbidity, a greater incidence of disease, but certainly a very much higher incidence of pulmonary tuberculosis. It is to be found not only in racial groups but among others. And because that has come to the surface, we are now confronted with the consciousness and the willingness to accept that responsibility, and indeed, health departments feel that they are justified in stepping into a brand new realm of sociological work and social work.

We in Wilmington have been bitten by that bug, and we don't know whether we are going to embark on such a program. We have decided to do so. It is now in the hands of the city council as to whether funds will be provided for us to do just that thing.

Now there is another departure or change in the thinking of public health administration. Actually, as you know, in Maryland they are developing widespread programs of care for the indigent, with the very close cooperation of the medical profession. You have repeatedly referred to the necessity of public health education, and you did emphasize the fact that that begins at our level, stemming from the public health officer asking that organized medicine assume the responsibility. We have done exactly that thing in Delaware this year, and carried on refresher courses, and we have I think profited tremendously at the level of bringing to the attention of the medical profession advances in the care of the tuberculous, and bringing them up to date as to what should be done. But we have gone beyond, and again, as you have pointed out, have begun to realize and to face and to attempt to do something about this business of carrying on an intelligent program of public health education. Without such a program the work of the Public Health Administrator just cannot succeed.

In an aside, or to digress for a moment in that connection, Dr. Hudson has referred to the tremendous improvement in tuberculosis control, or the tuberculosis record, in the State of Delaware since 1918. That too has a hazard. It has a danger. To be sure, from 208 deaths per 100,000 to 30 is worthy of satisfaction, but it is to be observed that if we are not on guard it leads to a degree of complacency, and from complacency we fail sometimes to recognize the danger. I think that we have suffered from just that sort of thing in Delaware. We have been going down and down and down in the morbidity and the death rate and so on, and suddenly we realize that we are not as good, we'll say, as Iowa. To be sure, we have the racial problem in Delaware that they do not possess in Iowa, but does that account for the fact that Iowa has 8 per 100,000 and we have 37? The danger is that we overlook the fact that perhaps we have done well but we could and should do better.

So, out of it comes the consciousness that we in medicine must look after our thinking with regard to our general hospitals; we must see to it that we do not become complacent; we must see to it that there is an organized program for providing post-graduate instruction for our membership, and that somehow or other we are clear in our thinking and realize that there is a difference between publicity and human relations, and there is a distinction between those two and good public health education, and it requires dispassionate planning and understanding and everlasting stick-at-itness to get the job done efficiently.

Dr. Reeves: I know I am beyond the time but I want to make a couple of statements which may be a follow through on Dr. Washburn and Dr. Hudson.

Dr. Hudson, I don't know whether you know that Dr. Vaux found himself in the same position in Pennsylvania relative to having surgery done, as you are. Dr. Vaux took advantage of finding out which of the large hospitals in the city had capable chest men, and he found funds in the amount of $14.50 a day for the hospital, and the good medical man I believed received something like $50 for doing a chest operation.

That is the number one point that I wanted to mention. Number two, I am in such hearty agreement with Dr. Washburn relative to his remarks about tuberculosis not being admitted to general hospitals. That, I think, is a fearful mistake from many points of view, but particularly from the viewpoint of the patient. I have been discussing the matter with both Dr. Vaux and with Mr. Brown, who is the Secretary of Welfare of the Commonwealth of Pennsylvania, and I have suggested to both of them that they get their heads together and agree on legislation being introduced into the next legislature of the Commonwealth of Pennsylvania which will increase in some amount the state allocation of funds to general hospitals, with the distinct understanding that if they are not willing to participate in the tuberculosis program in a general hospital, that their state allocation will be cut.

I think that that is a very practical approach to some of our friends in the legislature, who really need a tremendous amount of public health education.

The state and county societies in both states can take a note out of the activities which are needed both on the state and local level, as far as the securing of funds is concerned. There are too many men in the legislatures these days, or in councils these days, that think they have to see all these things done for highways and bridges, and what not, and moneys which should be put at the disposal of health officers are, in my opinion, not allocated on the basis of need for public health, which they should have.

I want to again thank you very much for the privilege and honor of being asked to be on your program.

THE ABSENCE OF TRANSFUSION REACTION WITH ACTH AND CORTISONE*

A Case Report

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and A. Henry Clagett, Jr., M. D.
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While the use of ACTH and cortisone in hemolytic anemia and erythroblastosis fetalis has been reported,[1] there is nothing in the literature regarding their action in patients who have received incompatible blood although its use in this condition has been urged.[2]

The following case report is important in that the patient inadvertently received 1400 cc. of incompatible blood while being treated with ACTH for acute granulocytic leukemia and had no symptoms or signs of transfusion reaction.

Report of a Case

A 29-year-old Negro was admitted to the hospital on March 21, 1951. Peripheral blood studies and bone marrow aspiration established the diagnosis of acute granulocytic leukemia. On March 23, therapy with ACTH was instituted. (Fig. 1) On March 29, cortisone was substituted for ACTH. This was discontinued on April 16, because it apparently was producing no beneficial effect.

Because of rapidly developing anemia, the patient was given a total of 1400 cc. of type A Rh Negative blood over a three-day period from March 28 to March 30. Except for a slight febrile reaction which occurred near the end of the first transfusion, there were no adverse effects; indeed, the patient was improved and showed a slight rise in red blood count and hemoglobin.

On April 5, further transfusions were indicated. The patient's blood was retyped, as is customary, and was found to be type B Rh Negative. Samples of the patient's blood obtained prior to March 28 were retyped and recrossmatched with the blood from the first three donors. These tests showed that the original typing and cross matching had been erroneous and that the patient had received 1400 cc. of incompatible blood.

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*From the Medical Service, Veterans Administration Hospital, Wilmington.

Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the authors are the result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

During the following fifteen days, 3825 cc. of type B RH Negative blood were given. (Fig. 1)

Throughout the course of this patient's illness there was no evidence of hemolytic reaction or impairment of renal function. Fig. 1 shows pertinent laboratory and clinical findings. It can be seen that the blood urea nitrogen never exceeded 18 milligrams per cent, the urinary output was satisfactory, and the red blood count and hemoglobin showed a definite increase. In addition, the patient at no time was jaundiced; there was no hemoglobinemia, hemoglobinuria, or increased urinary urobilinogen excretion. Serial anti-A agglutinin titers and survival time of donor cells were not determined.

The patient's condition rapidly became worse and he expired on April 24, 1951 during an acute episode of pulmonary edema.

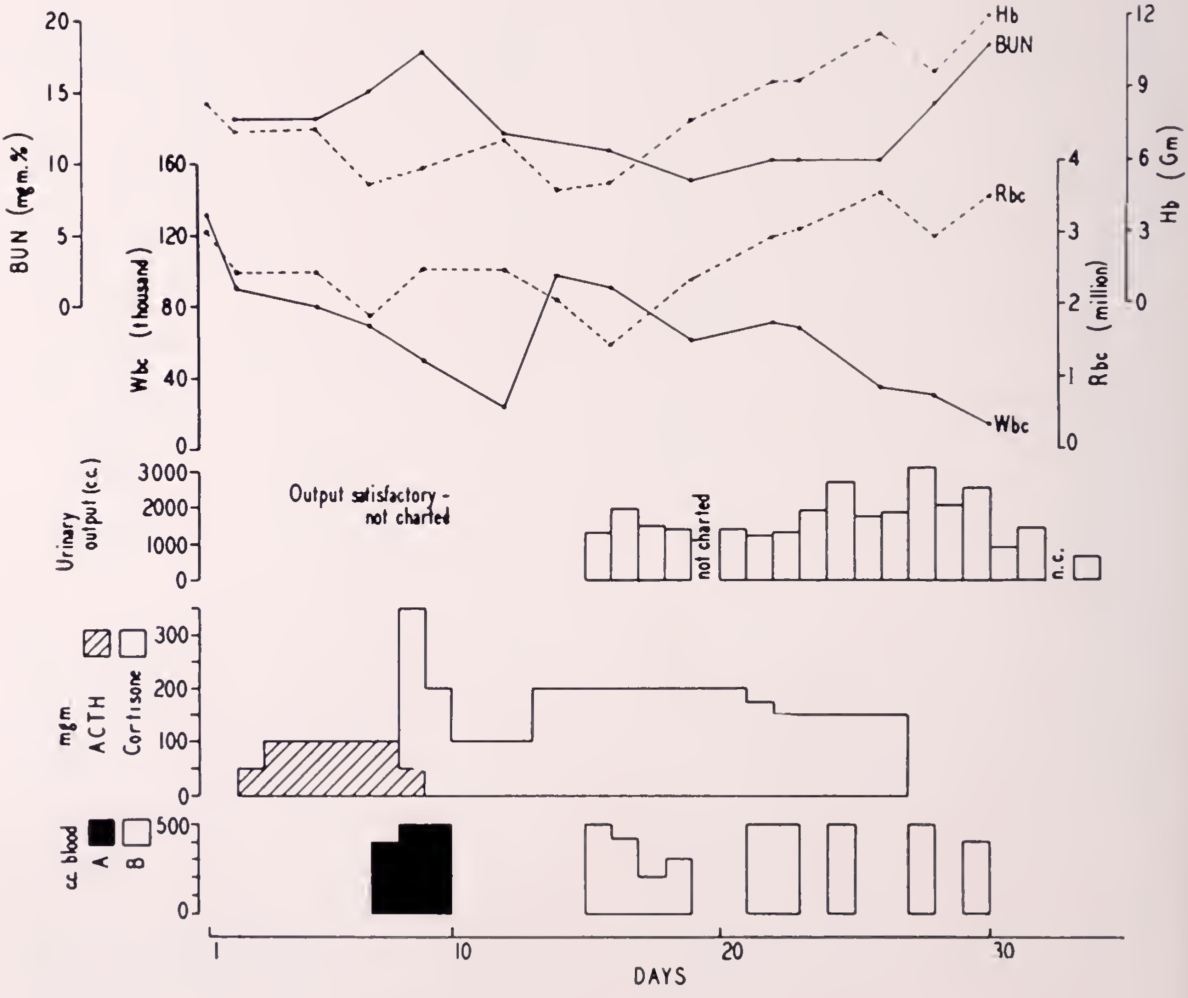
Autopsy confirmed the previously established diagnosis of acute granulocytic leukemia. There was no microscopic evidence of renal damage other than granulocytic infiltration. Particular attention was paid to ruling out the presence of lower nephron nephrosis.

SUMMARY AND CONCLUSIONS

This patient showed no untoward effects after receiving 1400 cc. of incompatible blood. He was receiving ACTH and cortisone at the time.

Apparently there have been rare instances in which transfusions of incompatible blood have resulted in no detectable reaction.[3]

While Davidsohn[4] has reported low iso-agglutinin titers in patients with chronic leu-



kemia, he found normal or slightly elevated titers in the acute disease.

Although the reason for the absence of a transfusion reaction in this patient is unknown, it is being reported because of the possibility that the administration of ACTH and cortisone was a factor.

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SLUDGED BLOOD IN POLIOMYELITIS

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Intravascular agglutination of erythrocytes, sludged blood,[1] has been described by Knisely and Bloch in numerous publications. This pathologic physiology of circulating red blood cells has been described by the authors in a large number of diseases in humans and in animals. This tendency for the red blood cells to clump together has not been seen in normal individuals. Sludging has also been described in anterior poliomyelitis.[2]

According to Knisely, the major known mechanisms in which sludged blood damages the body are as follows:

(a) Sludged blood reduces the rates of flow through all blood vessels. This forcibly reduces the rates at which the oxygen and glucose of the blood can be carried to the endothelium of the walls of the blood vessels which results in anoxia or hypoxia of the stagnant type. Anoxic endothelium always permits blood fluid to pass out through the walls of the small vessels. This acts toward causing hemoconcentration, edema, and reduction of the circulating blood volume.

(b) Agglutinated red cells are ingested and destroyed in the phagocytic cells of the liver, spleen and bone marrow. This results in anemia and in a decreased circulating blood volume. These phagocytes ingest protein-coated red cell masses. This factor may initiate and maintain protein deficiencies in human patients.

(c) The sedimented agglutinated red blood cells may cement on the vessel walls into a large mass, which forms a thrombus.

(d) These masses may cause minute embolizations and/or multiple minute thromboses.

(e) The above conditions may initiate intermittent, controlled shutting off of the arterioles, capillaries and venules in a selected series of tissues and organs.

In connection with blood sludging in poliomyelitis, it is of interest to quote Stewart[3] (1904) who refers to Batten[4] and Taylor[5] regarding the "morbid anatomy" of infantile paralysis:

"With regard to the morbid anatomy of the disease, the lesion in the first stage is characterized by engorgement and thrombosis of small vessels, with perivascular exudation, minute blood-extravasations, and small cell infiltration of the surrounding tissues. In the second stage there is necrosis of the tissues from which the blood has been cut off, and in the third stage absorption of the necrosed products, with contraction and cicatrization. Two views have been held to explain the pathology of these appearances. According to some observers the condition is due to a specific infection producing an acute inflammation, whilst others maintain that it is a vascular thrombosis due to some altered blood condition, not dependent on one specific infection, but due to various causes.

"There can be no doubt that the necrosed areas correspond accurately to the distribution of single vessels. In the cord, this area corresponds exactly with that of the anterior median artery. The great frequency of anterior poliomyelitis in the lumbo-sacral region seems to favor the view that the condition is primarily vascular, for the anterior cornua in that region are situated at a point most peripheral from the blood supply, i.e., the blood from the vertebral artery has to traverse the whole length of the anterior spinal artery, there being but little collateral anastomosis in that part of the cord.

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"In favor of the infective theory is the well-known occurrence of epidemics of the disease (e.g. Woods' 25 cases, [3,6] Painter's 38 cases, [4,7] and Mackenzie's 10 cases, [5,8] at certain times of the year, and sometimes in several members of the same family. This, however, is not necessarily antagonistic to the thrombotic theory; the infection only supplies the cause of the blood-change."

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OXYGEN THERAPY

A Brief Review

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It is a matter of record that Joseph Priestly discovered oxygen in 1774, but it was Lavoisier, three years later, who demonstrated that the gas was absorbed by the lungs, burned by the tissues, and eliminated as carbon dioxide and water.

It has since been shown that oxygen is the most widely distributed of all chemical elements, and the most important. Metabolism, which is life itself, is entirely dependent upon an adequate supply of oxygen to fan its fires. Oxygen, then, is literally the breath of life.

In 1798 Thomas Beddoes established his Pneumatic Institute in England in which he attempted to use oxygen as a cure-all. As a result of its misuse its actual therapeutic value suffered unmerited neglect for the next hundred years.

The modern concept of the therapeutic value of oxygen arose during the first World War, when, in 1917, Meltzer and Haldane demonstrated its great value in the treatment of pneumonia and pulmonary burns resulting from chlorine and phosgene. In 1922 Barcroft constructed at Cambridge University the first oxygen chamber, in which it was possible to control the percentage of oxygen. Similar chambers were later constructed at the Rockefeller Hospital by Stadie and Massachusetts General Hospital by Barach, and led to further important discoveries on the respiratory function of the blood. In 1925 Hill developed an oxygen tent so that the patient could be surrounded by a high concentration of oxygen no matter where he was located.

The main indications for oxygen therapy is anoxia, oxygen lack; (hypoxia, if you wish) anywhere, generalized or local. Local tissue anoxia such as from thrombus, particularly coronary and cerebral, may be greatly benefited by oxygen therapy. However, our more common and serious concern is with the various forms of generalized anoxia of which there are four main classifications:

1. *anoxic anoxia* — due to insufficient pulmonary oxygenation of the blood from such causes as decreased volume capacity of the lungs, reduction of the partial pressure of oxygen in the inspired air, emphysema, pulmonary edema, trachio-bronchial obstruction, et cetera.

2. *anemic anoxia* — due to a reduction in the amount of oxygen that can be furnished to the tissue by the blood as a result of decreased hemoglobin content such as in anemia, or in carbon monoxide poisoning where the ample hemoglobin is taken up by the carbon monoxide which has several hundred times the affinity for hemoglobin as does oxygen, and thus prevents the formation of oxyhemoglobin.

3. *histotoxic anoxia* — due to an interference with the ability of the tissue cells to utilize oxygen such as in cyanide, alcoholic, or other cell poisons.

4. *stagnant anoxia*—due to circulatory failure such as follows myocardial failure or shock.

The utilization of oxygen takes place in the various cells of the body to which it is transported by the blood. Now, how does the blood pick up, carry, and unload this oxygen? One of the laws of gases states that the amount of free gas in a solution will vary according to its partial pressure. It is the partial pressure that is the driving force of the oxygen into the plasma, from plasma to red cells and then from red cell to the plasma to the tissue cells. The oxy-hemoglobin is the store house; it is the plasma that actually retails the oxygen to the tissues.

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The following chart (1) gives the oxygen content of 100cc of air, alveolar air, arterial blood and venous blood, and shows the oxygen tension in mm. of Hg. It is readily seen that the oxygen is driven from its partial pressure high of 159mm. Hg. in the air towards its low pressure of 35 mm. Hg. in the tissue cells. Approximately, 300cc of oxygen are required per minute in normal body metabolism, and 200cc of carbon dioxide are eliminated. The pressure gradient of carbon dioxide is in reverse from that of oxygen. The high pressure of the carbon dioxide is in the tissue cells and the low is in the inspired air so that carbon dioxide is eliminated with each expiration.

CHART 2

Effect of breathing 100% oxygen on arterial and venous oxygen content, tension, and degree of saturation.

Arterial blood	**Venous blood**
20-20.5 cc/100	15-18 cc
.3 cc-3.3 sol.	
03. cc equals 14% increase	20% increase
90 mm.-100 mm.	40 mm.-60 mm.
95 sat.-100 sat.	75 sat.-90 sat.

CHART 1

Air	**Alveolar Air**	**Arterial Blood**	**Venous Blood**	**Tissue**
Oxygen				
21.cc/100	14.cc/100	20.cc/100	15.cc/100	
		.3 cc in sol.	.15 cc in sol.	
159 mm. Hg.	100 mg. Hg. tension	90 mm. Hg.	40 mm. Hg.	35 mm. Hg.
		95% sat.	75% sat.	
Carbon Dioxide				
.03cc/100				
23 mm. Hg.	40 mm.	40 mm.	46 mm.	52 mm.

The next chart (2) shows the effect, in a normal subject, of breathing pure oxygen instead of air. It is seen that the arterial blood oxygen is only increased about 3 cc per 100 cc of blood, but that this results in a 50 per cent increase in the oxygen tension available to the tissues (venous blood) in that the tension is increased from 40 mm. Hg. to 60 mm. Hg.

In conditions where severe anoxia exists, marked increases in the arterial oxygen saturation may result from 40 to 50 per cent oxygen inhalation. In pulmonary edema, for example, where the oxygen content may be only 8 cc per 100 cc representing 40 per cent saturation, the oxygen content may be increased to 22 cc per 100 cc or with close to 100 per cent saturation. This would increase the oxygen available to the tissues by about 150 per cent.

Carbon dioxide and oxygen tension gradients from inspired air to tissues; also, oxygen content and percentage saturation breathing air.

The symptoms of anoxia depend upon whether it is of acute or insidious occurrence, and of a mild or severe degree.

Acute

a. slight—hyperonea, increase in pulse rate

b. moderate — headache, nausea, fatigue, tremors, loss of mental capacity, deplopia, et cetera.

c. severe — delirium, fever, coma, convulsions, and death in a matter of minutes.

Insidious—

Resembles alcoholic intoxication; exhilaration, due to cerebral stimulation; impaired mental function; emotional disturbances; restlessness; amnesia; ataxia; muscular weakness; ascending muscular paralysis; loss of special senses, (hearing last to go); coma; death.

The capacity of the cell to carry on its functional activity is decreased because oxygen lack interferes with the intracellular oxidation upon which the functional activity of the cell depends.

As Haldane stated, "anoxia not only stops the machine but wrecks the machinery." Severe acute anoxia in addition to the symptoms produced above, causes definite tissue damage. The central nervous system is most vulnerable and changes are found here first. Ganglion cells show all stages of damage from minor chromatolysis to swelling, shrinking,

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disorganization of cytoplasm, distortion and nuclear rupture. Hyperemia, subpial and perivascular hemorrhages are common. Severe capillary congestion is found in the cerebral, pulmonary, renal and intestinal tissues. Degenerative changes are found in the liver, heart and kidneys, regarded as early signs of necrosis.

The extent and duration of the anoxia are the determining factors in the clinical symptoms and pathological damage. Recovery may occur, certain damage may be permanent or death ensue.

Cyanosis has not been mentioned as a symptom of anoxia, for it may be a very misleading objective finding. It is merely a blue color imparted to the skin or mucous membranes when at least 5 grams of reduced hemoglobin per 100 cc. of blood are present and may be altered or masked by thick or highly pigmented skin, jaundice; and accentuated by cutaneous capillary dilation. Cyanosis *may be* present with ample systemic oxygenation due to:

a. local chilling causing decreased blood flow to a part

b. polycythemia where there may be 5 grams of Hb. per 100 cc. of blood in excess of that required for normal oxygenation of tissues.

Cyanosis *may not* be present when there is severe anoxia:

a. anemia—if there were a total of less than 5 grams of Hb. per 100 cc. of blood it would be impossible for cyanosis to appear.

b. carbon monoxide poisoning — carboxy Hb. is red, thus no cyanosis.

c. histotoxic anoxias — blood well oxygenated but tissue cell cannot use it.

d. shock—due to decrease in peripheral Hb. (vasoconstriction with decreased peripheral circulation.)

Cyanosis *may* indicate severe anoxia:

a. conditions causing anoxic or stagnant anoxia. However, even here it is unreliable as an index, for of 127 observers, 75% were unable to discern cyanosis until the arterial oxygen saturation had dropped to 80 per cent, and 25 per cent of them could not see it until it had dropped to 71 per cent, which is less than the normal venous blood saturation, and was produced by the inhalation of an atmosphere containing only 10 per cent oxygen.

Let us consider a few conditions in which the indications for oxygen are fairly constant and in which, if applied early, give spectacular results:

1. pneumonia:
   a. Fast, shallow breathing, thready pulse, irrationality indicate severe anoxemia.
   b. Don't wait for cyanosis to appear.
   c. Don't reserve oxygen for the moribund patient: it will not raise the dead.

Several large series of cases by Barach and others show the death rate to rise in direct proportion to the delay in instituting oxygen therapy. In one series, 16 per cent died between the time oxygen was called for and could be brought to the patient, and an additional 10 per cent died within 24 hours after starting the oxygen. In 77 cases who received oxygen within 24 hours of diagnosis there were only three deaths.

In pneumonia the alveoli are filled with exudate and a portion or portions of the lung converted to a solid, airless mass. Diffusion of oxygen is diminished, vital capacity lowered. In addition, fever and toxemia increase the metabolic rate, thus increasing the tissue demand for oxygen. Consequently, an increasing demand for oxygen with a diminishing supply soon establishes a vicious cycle.

Factors which defeat oxygen therapy are massive consolidation, rapid circulatory failure, and toxic depression of the respiratory center.

Oxygen helps by raising capillary oxygen tension, slowing the pulse, reducing cardiac work, reducing respiratory rate and effort, and conserving the functional capacity of the myocardium.

2. *cardiac disease*:

Impaired cardiac function ultimately results in circulatory failure and pulmonary edema followed rapidly by lowered arterial and venous oxygen content, and on the vicious circle goes.

Oxygen is of help in congestive failure due to primary cardiac disease; cardiac insufficiency, secondary to chronic pulmonary disease; acute coronary thrombosis, and coronary arteriosclerosis with chronic cardiac pain.

It is interesting to note that the myocardium requires, during exertion, as much oxygen as the entire body at rest. It functions abnormally with one-fifth the oxygen debt at which skeletal muscle remains unimpairerd.

During muscle contraction glycogen is broken down into lactic acid and oxygen must be available to oxidize a portion of this lactic acid and convert the remainder back to glycogen. Myocardianoxia results in a rapid depletion of available glycogen leading to embarrassed myocardial contractility.

3. *asthma*:

Asthma produces a decreased oxygenation due to a decreased vital capacity and thus less surface for diffusion of gases. There is increased residual air and thoracic negative pressure.

Oxygen alone is not satisfactory in the treatment of asthma.

Helium-oxygen, 80/20 is good, especially if given with positive pressure of one to three cm. of water. The density of helium being so much less than that of oxygen or nitrogen, (79 per cent of air) that an 80/20 helium mixture requires one-third the force or effort for its movement through the constricted bronchioles of the asthmatic.

4. Other conditions benefited by oxygen therapy:

- a. shock or impending shock; severe operations; hemorrhage
- b. pulmonary embolism
- c. chronic ulcers due to circulatory stasis at site of lesion
- d. cerebral embolism; mesenteric embolis
- e. anaerobic infections
- f. severe toxemia, such as acute thyroids, where the metabolic rate is considerably increased.
- g. intra-uterine foetal distress; asphyxia neonatorum.
- h. morphine, barbiturate, and alcoholic poisonings.
- i. gas poisoning such as carbon monoxide.
- j. pulmonary exudation due to irritant gases, burns.
- k. high altitude flying or climbing (the percentage of oxygen in the air at high altitudes is the same as at sea level, but the tension or pressure is much less.)
- l. convulsions.
- m. 100 per cent for removal of nitrogen
  1. abdominal distension, such as ileus
  2. prior to pressure dives, etc., to rid the body of nitrogen and prevent the "Bends."
  3. headaches following encephalography.
  4. pneumothorax.

It must be kept in mind that oxygen therapy is not a cure, it is but a therapeutic crutch to help support the patient while the physician gains time to locate and treat effectively the causative factors producing the anoxemia or anoxia.

Methods of Oxygen Therapy

The commercial type, large cylinder, containing 244 cubic feet of oxygen under 2,200 pounds pressure should be used. Smaller tanks are too costly for routine use. There are many ways and means of administering oxygen, but only three methods will be briefly mentioned here, as they are most commonly used and therefore better understood by the greater number of physicians and nurses having occasion to administer oxygen therapy.

1. Mask-Nasal and Oro-Nasal — Best for high concentrations and the only method by which near 100% oxygen may be given. Most suitable for providing high concentration for short periods up to a day or two. Requires constant supervision to be effective, may be irritating to patient and produce pressure sores.

2. Nasal Catheter — Best for general use, providing concentration up to 60%. It is safe, inexpensive, requires minimum of equipment and is easiest of all methods to administer. Does not require constant supervision. May be irritating to naso-pharyngeal mucosa after week or two. Must be removed every 12 hours, cleaned, lubricated, and reinserted in opposite nostril. Is only method other than oxygen room which need not be interrupted in providing patient nursing care, medication or food.

3. Oxygen Tent — Very good, but cost exceeds that of mask or catheter; oxygen concentration provided patient is less than mask and **may be** equal to catheter if properly set up and constantly supervised. Oxygen concentration is interrupted in providing nursing care and food. May be dangerous if oxygen supply or ice runs out unnoticed. Excellent in providing a temperature controlled atmosphere plus oxygen to the patient and thus best indicated in the heat of the summer or in the presence of high fever.

Administration

A. Mask Method:
  1. Equipment
    a. Tank of oxygen

b. Pressure reducing valve and flow regulator

c. Mask with bag and connecting hose

2. Procedure

a. Have orderly bring tank of oxygen, fasten it to head of bed with strap and attach regulator to tank.

b. Attach hose connections from mask to flow meter and turn on oxygen tank.

c. Turn on oxygen flow to about four liters per minute.

d. Place mask firmly on face making sure it fits smoothly with no leaks and hold in place with head strap.

e. Adjust oxygen flow to patient's respiratory volume — the bag should be not quite empty at the end of inspiration.

B. Catheter Method 4L/min-30%; 5L/min-40%; 8L/min-50%

1. Equipment

a. Tank of oxygen

b. Pressure reducing valve and flow regulator with humidifier

c. Nasal catheter, vaseline, adhesive tape and scissors

1. Procedure

a. Same as with mask

b. Fill humidifying jar to proper level and attach to flow-meter

c. Attach hose to outlet of humidifier and attach catheter to opposite end.

d. Measure approximate length of catheter to be inserted and mark with small piece of tape—from tragus of ear to lateral side of nostril.

e. Turn on oxygen flow to about 4 liters per minute and lubricate catheter the length of insertion with thin film of vaseline (not water-soluble).

f. Insert catheter into nostril towards floor of the mouth up to mark made in (d). Tip of catheter should be visible just behind uvula.

g. Run catheter up over tip of nose, across bridge onto forehead and tape in place across bridge of nose and on forehead, and adjust oxygen flow, 4,6,8 Liters/min for 30,40,50%.

h. Every 10-12 hours insert clean catheter into opposite nostril in same manner and remove old one, clean it and have it ready for next change.

C. Tent Method

1. Equipment

a. Oxygen tent

b. Pressure reducing valve and flow regulator

c. Oxygen tank

d. Ice — chopped pieces size of your fist, **not** crushed ice.

e. Extra rubber sheets to cover entire mattress beneath patient

f. Extra bath blankets.

2. Procedure

a. Have orderly bring above equipment (a) to (d)

b. Get room ready to receive tank and tent.

c. Prepare mattress with rubber sheet and patient with bath blankets.

d. Have orderly place tent in position, attach regulator to oxygen tank and tent and fill ice chamber of tent with ice.

e. Adjust tent canopy over patient, tucking it under mattress smoothly a distance of 10-12 inches on top and sides and adjust it snugly across patient's lower abdomen holding it in place with extra blanket.

f. Flood tent with oxygen for a minute by holding down flush valve.

g. Set flow of oxygen on flow meter usually 8 to 12 liters per minute.

h. Adjust temperature control to provide proper temperature usually 70° F or during very hot weather 10°-15° below room temperature.

i. Check tent constantly for oxygen flow and supply, ice content, temperature and leaks around canopy. Empty ice water P.R.N.

j. Permit no electric switches or buttons, matches, lights or lighted cigars, cigarettes or pipes within the tent, and no smoking in the room. Place signs so stating on door of room and in the room.

k. Modern refrigerated tents do not require the frequent addition of ice and removal of water.

General Remarks

Oxygen is not explosive and does not burn but it does support combustion so readily that a lighted cigarette, for example, will explode into flame in the presence of a high concentration of it. Under the heat of pressure it may cause readily combustible substances such as oils and greases to burn, thus no oils or greases are used on the connection of the oxygen tank to the regulator or near the regulator.

The oxygen within the tank is under a pressure of 2,200 pounds per square inch. Although the tanks are checked frequently, a flaw could develop. In the presence of such a defect should the tank be subjected to a severe blow such as being dropped it might blow apart. Handle with care! Make sure they are placed where they **won't be** and fastened so they **can't be** knocked over!

The tent canopy, nasal catheter, face mask and bag should be washed with green soap and lysol solution and thoroughly dried before being sent back for storage.

Before starting any of the above procedures explain to the rational patient what you are going to do and what they must do. A patient who understands what is to be done, and is assured it will not hurt and is for his benefit will cooperate readily.

Chart

1. Time administered, method used, oxygen flow in liters and temperature within tent if tent is used.

2. Patient's reaction, especially pulse and respiration frequently.

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CORTICOTROPIN AND CORTISONE THERAPY IN DERMATOLOGY

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In May, 1949, Kendall and his co-workers Hench, Slocum and Polley, presented to the Staff Meeting of the Mayo Clinic, their observations on the effects of a hormone of the adrenal cortex (17-hydroxy-11 dehydrocorticosterone), and of a pituitary adrenocorticotrophic hormone on Rheumatoid arthritis. The experimental cortisone had been supplied by Merck & Co., and the corticortropin (ACTH) by Armour & Company, where the Medical Director, John R. Mote, had perfected its isolation and purification from the pituitary glands of slaughtered animals. In two and one half years rapid progress has been made in the clinical evolution of these drugs. This is also true of their commercial production, so that both drugs are available in sufficient quantities and lowered price to the medical profession.

Cortisone is one of several allied steroids known to be secreted by the adrenal cortex. It was isolated by Kendall in 1936. Reichstein of Switzerland described it independently. Merck's research department synthesized the compound in 1946. Its chemical formula is 11-dehydro-17-hydroxycorticocosterone.

Corticotropin (ACTH) is a biological of undetermined chemical structure, currently extracted in commercial quantities from the pituitary gland of slaughtered animals.

Cortisone has several direct physiological actions upon the tissues of the human body. Corticotropin causes a primary stimulation and increased functional activity of the adrenal cortex, with increased production of cortisone.

Thus, both cortisone and corticotropin produce the same ultimate physiological responses, the former by substitution, the latter by stimulation of increased production. These main physiological responses are:

1. Regulation of distribution of sodium, potassium and chlorides.
2. Regulation of the water balance.
3. Regulation of the body chemistry of carbohydrates, proteins, and fats.
4. They are concerned in the formation of blood eells and lymphoid tissue.
5. They are involved in sexual anatomy and physiology.
6. They affect the cutaneous pigmentation.

RESPONSE TO CORTISONE IN VARIOUS SKIN DISEASES

Beneficial to Curative	Encouraging	Transient
Pemphigus	Dermatomyositis	Scleroderma (early)
Exfoliative Derm-	Sarcoidosis	Periarteritis Nodosa (early)
Allergies		
Contact Dermatitis		Psoriasis
Drug Sensitivities		
Serum Sickness		
Angio Neurotic edema		
Extensive Burns		
Dissem. L. E. (early)		
Erythema Multiforme		
Erythema Nodosum		

Undesirable side effects occur in a certain number of cases under therapy with these drugs. Most of them occur when heavy doses are administered, or over a long period of time. Fortunately, all of these are transient and reverse readily when the use of the drug is discontinued. Some of these side effects are:

1—Various mental changes—usually mild, transitory.

2—Disturbance of electrolyte balance—retention of sodium and water.

3—Hypertrichosis. Rounding of face (moon face).

4—Increase in blood pressure.

5—Interference with menstrual function.

6—Disturbance of carbohydrate metabolism.

7—Increased blood coagulability.

8—Increase in pigmentation of the skin.

It is uncommon for all of these to be observed in the same individual, but one or more may be when the dosage is heavy or treatment protracted.

While there may be no absolute contraindications to the use of these drugs, certain diseased states make their use unwise, except under great emergency and under most careful observation. Some of these relative contraindications are:

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1—Active tuberculosis. Probably latent and suspected.
2—Myocordial failure or diminished cordiac reserve.
3—Hypertension of severe grade.
4—History of psychotic state.
5—Severe diabetes mellitus.
6—Severe pyogenic infections.
7—Market renal insufficiency.
8—Thrombotic phenomena — coronary infarction, cerebral thrombosis, pulmonary embolus, thrombophlebitis.
9—Peptic ulcer.

Cortisone is supplied in tablets of 25 mgm. for oral use, and in aqueous solution for intramuscular injection. The oral route appears to be as effective as the intramuscular and has the advantage of adaptability to ambulatory patients. There is no set dosage schedule. The nature and severity of the dermatosis are important factors in the initial dosage while later phases of dosage are governed by the response of the patient's disease. A recommended schedule for many dermatoses is one similar to that used in rheumatoid arthritis:

1st day 100 mgm. every 8 hours for 3 doses.
2nd day 100 mgm. every 12 hours for 2 doses.
3rd day 100 mgm. every 24 hours for 7 to 14 days.

Corticotropin (ACTH) is prepared as a sterile powder to be mixed with water for intramuscular injection. Recently, it has been incorporated in a Gel suspension (delayed absorption), making it possible to give a daily dose with one intramuscular injection. It has also been found that small amounts of corticotropin may be administered safely by the intravenous drip route.

In view of the fact that metabolic alterations are to be avoided if possible, the initial dosage level should be such as not to cause a metabolic shift in most individuals. Accordingly an initial dose of 10 mgm. of Corticotropin, four times daily for a few days, is desirable in most cases. Where higher dosage levels are needed to produce a clinical effect, it should be borne in mind that metabolic changes are apt to occur and generally the therapeutic management of such cases must be individualized.

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CORTISONE AND CORTICOTROPIN IN THE TREATMENT OF ACUTE INFLAMMATORY SKIN ERUPTIONS*

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During the past year there have been articles discussing the treatment of pemphigus and disseminate lupus erythematosus with the corticosteroids. We have also been impressed with the value of these drugs in the treatment of severe acute inflammatory eruptions; for dermatologic experience demonstrates that when eruptions are allowed to become chronic eczematous lesions, the treatment is often time-consuming, difficult, and expensive.

The seven cases presented in the chart demonstrate the value of these drugs in the treatment of severe acute inflammatory skin disease.

DISCUSSION

All of these patients, except one, were hospitalized and followed to the conclusion of therapy. In our use of the steroids, no toxic effects were observed, as the drug in most cases was stopped within five days. The dosage schedule was routine and the intravenous ACTH was usually given over a six to eight hour period. We feel now that, with the advent of oral cortisone, and the short period of usage in these cases, most of them could have been treated at home quite safely.

It has been shown that these drugs do not diminish sensitivity to an allergen as shown by patch test in serial dilutions[1]; however, they do diminish the inflammatory reaction which characterizes the acute eruption. In so doing, they abort the eruption and prevent the subsequent development of secondary infection with sensitization to bacteria and their

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*Read before Staff Meeting, Wilmington General Hospital, November 12, 1951.

**Medical Resident, Memorial Hospital.

***Chief in Dermatology, Wilmington General Hospital.

Sex	Age	Diagnosis	Duration of Disease	Initial Dose	Daily Dose	Response
F	32	Severe Contact Dermatitis (Poison Ivy)	2 wks.	Cortisone* 200 mgm.	100 mgm. for 5 days	Good
F	23	Eczema Herpeticum (Herpes Simplex infection of Atopic Eczema)	24 hrs.	ACTH 20 mgm. i. m. q.6 hrs.	Gradually reduced over 4 ds. to 10 mgm. q.6 h. and stopped	Excellent
M	31	Severe Contact Dermatitis (Creosote)	24 hrs.	Cortisone 200 mgm.	100 mgm. for 3 days	Good
F	40	Severe Generalized Contact Dermatitis (Poison Ivy)	48 hrs.	ACTH 15 mgm. I. V.	10 mgm. for 4 ds. I. V. and stopped	Excellent
F	56	Severe Contact Dermatitis (Poison Ivy)	48 hrs.	Cortisone 200 mgm.	100 mgm. daily for 3 days	Excellent
M	58	Acute Exfoliative Dermatitis (Hodgkin's Disease)	1 wk.	ACTH I. V. 20 mgm.	ACTH I. V. 10 mgm. daily for 9 days	Marked relief of itching and clearing of eruption
M	25	Urticaria (Unknown)	2 wks.	ACTH I. V. 20 mgm.	Gradually reduced over 4 ds. to 5 mgm. I. V. daily and stopped	Good

*Cortisone used was oral in all cases.

products. It is emphasized that these drugs are of no value where the etiologic agent is still persisting. In common dermatoses, such as hand eruptions due to soap and secondary infection, the corticosteroids seem to accelerate the severity of the eruption, perhaps because of their adverse effect on a bacterial infection.

It is important to note that in the presence of infection an antibacterial agent should be given with the steroids. It is obvious that an accurate diagnosis must be made and routine bland dermatologic therapy applied to the lesions.

Finally, we do not suggest that steroids be used in every active inflammatory eruption of the skin; but in our opinion they are indicated in those eruptions in which the etiologic agent can probably be removed and the eruption is so severe that it will probably go into a chronic eczematous state unless aborted quickly.

Summary

1. Corticosteroids were used successfully to abort seven cases of acute inflammatory skin eruptions.

2. No toxic effects were observed in the short space of time that these drugs were used.

3. It is felt that, with further experience, most of these cases could have been treated as out-patients.

4. It is stressed that the use of these drugs is indicated only where the etiologic agent of the eruption has probably been eliminated; or, as in the case of Hodgkin's disease, temporary symptomatic improvement is urgently needed.

REFERENCES

1. G. Douglas Baldridge and Albert M. Kligman: The Effect of Cortisone on Experimentally Induced Contact Dermatitis, J. Invest. Derm., 17: 257, 1951.

DERMATITIS RESULTING FROM TOPICAL DENTAL THERAPY*

Elmer R. Gross, M. D.
Wilmington, Del.

A plea is made to dentists to desist in the practice of employing energetic shotgun antibiotic and sulfonamide therapy topically and focally.

The majority of dentists routinely employ a variety of shotgun antibiotic and sulfonamide preparations topically following extractions and in the treatment of septic conditions of the mouth.

These preparations are detailed to them with ever glowing reports. Unfortunately they are not aware of the dire consequences.

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*From the Department of Dermatology, Temple University School Medicine, Dr. Carroll S. Wright, Chief; Dr. Gross, Assistant Chief.

Local use of sulfonamides are tabu in the dermatologic field. Many antibiotics fall in this category. They have definitely been proven to be sensitizing agents. When they are employed locally they are capable not only of producing a dermatitis, but of sensitizing patients so that these therapeutically important preparations may prove dangerous when administered enterally and parenterally when a critical medical need arises.

The topical dental preparations that I refer to are available commercially in a variety of forms, from a sulfonamide paste to compound pastes, sprays and packs containing sulfonamides, penicillin, aureomycin, and other antibiotics.

In my private practice I have had occasion to treat 34 patients with a multiform type of eruption which originates primarily as a generalized pruritis followed by a multiplicity of lesions which simulate a contact dermatitis. The eruption usually begins on the palmar surfaces as a non-inflammatory vesicular eruption similating a dermatophytid.

Soon thereafter an erythemato-papulo-vesicular eruption presents itself on the upper extremities and face, with scattered lesions on the trunk, lower extremities and the plantar surfaces.

It is an explosive type of reaction simulating an "id" eruption rather than a dermatitis medicamentosa. The dermatitis is extremely pruritic and the patients that I have observed varied in their course from a mild to a severe bout which was directly proportional to the number of topical dental treatments with the offending agents.

The following is a typical case history:

B. S., white, female, age 23, wife of a physician, consulted her dentist for the treatment of an abscessed tooth. A preparation containing a sulfonamide, penicillin and aureomycin was applied topically. She returned to the dentist a week later and received a similar treatment.

That evening the patient had a generalized pruritis and she developed a linear vesicular eruption on both forearms, scattered papules on the face, and a non-inflammatory vesicular palmar eruption. Her husband phoned me and said: "My wife has oak poisoning, will you treat her?"

After examining the patient I suspected a contact dermatitis but could not elicit a clue. There was no history of drug ingestion. I asked her to retrace her steps twenty-four (24) hours prior to the eruption to its onset. During the course of questioning, she informed me she had consulted her dentist twice and that he had applied the aforementioned topical therapy. This was the solution to her dermatitis.

She was treated empirically and advised never to have a dentist employ topical sulfonamide and antibiotic preparations, cautioning her that future attacks would be of a greater severity and that these preparations may be contraindicated enterally and parenterally.

Another example:

A dentist telephoned me recently and asked me to suggest treatment for a patient that was sensitive to novocaine, stating that he extracted a tooth employing novocaine as a local anaesthetic in the morning. That evening the patient telephoned him stating that she was itching and "broke out in a rash."

On questioning the dentist he informed me that he sprayed the socket with a preparation containing penicillin and sulfonamides.

I told him that the latter was the offending agent. "Impossible," he stated, "I used such a small amount of the spray - - -". I cautioned him not to repeat the procedure on this patient again.

I caution all dentists to avoid topical shotgun sulfonamide antibiotic preparations. The sulfonamides are especially incriminating. From a dermatologic standpoint the preparations that have the lowest sensitizing index are aureomycin and terramycin.

My experience with terramycin locally has shown no cases of sensitivity and from my dermatologic experience I would subscribe to the use of this preparation as a topical dental agent when indicated.

MISCELLANEOUS

Medical Education Financing

Problems of medical education and licensure were discussed thoroughly at the 48th annual Congress on Medical Education and Licensure in Chicago February 10-12. The gathering drew nearly 500 medical educators, state board officials and members of advisory boards in medical specialties.

Speakers reported progress in the movement to raise private funds for medical education, and confidence was expressed that hard-pressed schools will not be subjected to possible federal control by accepting government aid to meet mounting instruction costs.

Dr. John W. Cline of San Francisco, president of the American Medical Association, announced a new plan which promises to be a substantial source of private funds for medical education. Dr. Cline also warned medical schools against becoming "perpetually dependent on Washington handouts."

He said that the A.M.A. Board of Trustees has approved in principle a plan whereby the association, as a corporation, would accept patents for medical discoveries made by member physicians. All royalties, he said, would be turned over to the American Medical Education Foundation for distribution to medical schools.

"The A.M.A. has appointed a committee to study the technicalities involved," he said. "Provided no legal barrier is encountered, the proposed plan shortly will become a reality."

Dr. Cline also said that in supporting one-time federal grants to medical schools for construction and renovation, the A.M.A. believes them to be reasonably free from the hazard of federal control.

An increase in medical school enrollment of students from small towns probably would result in a larger supply of doctors in such areas, according to Dr. H. G. Weiskotten of Skaneateles, N. Y., chairman of the A.M.A. Council on Medical Education and Hospitals. A recent study of the present location of physicians who graduated from medical schools in 1930, 1935 and 1940 showed that residence before admission to medical college is in general the most potent factor in determining the place of practice, Dr. Weiskotten said.

Contributions to the American Medical Education Foundation are gaining in momentum, it was reported by Dr. Donald G. Anderson of Chicago, secretary-treasurer of the foundation and secretary of the council. During 1951, contributions totaling $745,000 were received from 1,811 individual physicians, 33 organizations and 33 lay friends of the medical profession, Dr. Anderson said.

"It is hoped that by concentrating fund raising activities in the spring of this year, the foundation will have a substantial sum available to turn over to the National Fund for Medical Education for distribution to medical schools on or about July 1," he added.

Dr. Anderson also said that under a recently adopted policy, contributions by doctors who specify a particular medical school will be added to the school's full share from the unearmarked funds raised by the foundation and the national fund.

American College Of Allergists

The next annual meeting of The American College of Allergists will be held this year at the William Penn Hotel in Pittsburgh, Pennsylvania, on April 7-8-9. The College is offering an unusually practical program for its fellows, members and guests.

An innovation for meetings of allergists will be a session devoted to the problems of the allergic patient as met in modern industrial medicine. All reputable physicians are welcome to attend. For more particulars, write the College, LaSalle Medical Building, Minneapolis 2, Minnesota.

American Congress Of O & G

The American Congress on Obstetrics and Gynecology will meet in Cincinnati, Ohio on March 31-April 4, 1952. Registration is $5 for members of the American Committee on Maternal Welfare, $10 for non-members. Send advance registrations or inquiries for details to 116 S. Michigan Avenue, Chicago 3.

Traffic Safety

One of the sorriest symbols of our times is America's automobile accident record.

The summing up for 1950 has just reached us from The Travelers Insurance Companies who each year publish an almanac of crash data. Of all the facts about auto accidents in their booklet, the most significant, it seems to us is this:

Almost 500,000 casualties in 1950 were the direct result of speeding. One out of every three Americans who lost their lives in last year's wrecks met death because someone was driving too fast.

Speed has been causing a greater percentage of accidents year after year. In 1950, speed was a greater factor in traffic casualties than at any time in history.

Traffic laws and law enforcement are part of the answer. Engineering will help some. But with perfect roads and perfect police work, the man behind the wheel can continue to exceed the speed limit if he wants to or if he isn't thinking.

Keep this in mind when you drive. Stay within speed limits and you'll be doing your full part in a crusade to reduce automobile accidents by one third.

Experience can be dangerous—even deadly.

This may surprise you, but statistics compiled by The Travelers Insurance Companies show that more than 98 percent of last year's fatal traffic accidents were caused by drivers with at least one year's experience.

Learning how to drive is relatively easy. The mechanics of driving become second nature soon after a student "solos." At this critical point, attitudes begin to take over. The super caution of the beginner is diluted by an ever-increasing confidence replaced by indifference, carelessness.

The skill of experience can sometimes get you out of trouble on the highway. But the chances are your over-confidence, your indifference got you into the trouble in the first place.

The moral is clear and urgent. Those of us who are experienced drivers must also be humble drivers.

In their 1951 booklet of street and highway accident data, The Travelers Insurance Companies record a total of 35,500 fatalities last year compared with 31,800 in 1949.

This discouraging picture reverses a postwar trend during which, although the numbers of registered motor vehicles increased steadily, the number of persons killed annually decreased.

In 1950, there were 3,700 more persons killed than in 1949 and there were 235,800 more persons injured last year than in 1949. Among that number of injured persons, no one knows how many more might have died were it not for expert medical attention given promptly. Nor does anyone know how many of those injured will spend the rest of their lives under physical handicaps which rival death itself as tragedies.

The Travelers report indicates that 1950's toll of killed is the highest since 1941's all-time record of 40,000. It is not a proud record.

We who drive—and walk—along the nation's highways and streets are responsible for the record. We *are* the record. We must accept this responsibility by driving and walking carefully.

"Social erosion in the emergency days ahead of us could assume the proportions of a landslide. We must be prepared for taut nerves and distraught lives. Above all else, no matter what happens, we must safeguard our youth—continue to train them in good citizenship; we must be eagle-eyed against circumstances defrauding them of that normal birthright of all Americans. To this end, I know of no better life-net than the Red Feather services." Stanley C. Allyn, president of the National Cash Register Company and president of Community Chests and Councils of America, Incorporated.

The National Automatic Merchandising Association, in an all-out public service program for united Red Feather campaigns throughout the country, distributed in 1950, a total of 40 million Red Feather match books, 12 million Red Feather paper beverage cups and 100 thousand Red Feather acetate tape messages through their local members. The project was done at no cost to the Community Chests.

+ Editorials +

DELAWARE STATE MEDICAL JOURNAL

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Vol. 24 February, 1952 No. 2

The A. M. E. F.

There are 79 four-year and 7 two-year medical schools in the United States, most of which have needed financial support very badly during the last several years. There is a probability that unless aid is given by the alumni of these schools there will be federal government aid and control. Two years ago most medical school Deans wanted money from anywhere. This year they can see the potential dangers of government aid and want no part of it. There have been many times in the past when each of us have wanted to do something to "save our freedom" and have said, "But what can I do?" This is a problem of the medical profession and must be solved by the medical profession. It is our opportunity to do something.

The American Medical Education Foundation is now completely organized with a national headquarters and state and county committees which will solve the problem. Prior to 1951 there were 86 alumni associations conducting campaigns to raise money. Through the A. M. E. F. there is one organized program which will accomplish much more than the sum of 86 units. The state societies of every state are pushing this program. The medical school alumni associations and the Deans are heartily supporting it and will soon announce this fact.

Our Alma Maters lost at least $1,000 a year on each of us, a total of $4,000. Many doctors feel that they should repay at least a part of this original investment. However, do not consider it a debt, but a responsibility to be met and an opportunity to aid your Alma Mater and prevent government control.

Every physician in the U. S. will be personally contacted and asked to give. Begin to consider how much you can give — not just this year but every year for three or more years. You will be asked to pledge!

Every cent donated will go to medical schools—every cent. The A. M. A. will, each year, pay all overhead expenses of the national headquarters. State societies are meeting the costs of any state expense. What you donate goes to medical school aid. This is probably the greatest single project ever sponsored by our Association.

But when you are asked to give be sure to give directly to the A. M. E. F., and, if you desire, specify which medical school you wish to receive the money. Within one month you will get verification from your Medical School Alumni Association. The advantage of this is that there are to be larger contributions from lay organizations, corporations and individnals, and their gifts will be in proportion to what the doctors give. But the percentage giving is more important than the amount given. We must make it 100 per cent, even though the contribution is small. And remember, it's tax deductible.

The Delaware chairman, appointed by President Stambaugh, is Dr. C. L. Hudiburg, who will soon set up the state-wide machinery and get things going.

Additional information about the A. M. E. F. will be found in an editorial in the J. A. M. A. for February 2, 1952, page 375.

A. M. A. EXEMPT MEMBERS

Following our editorial and listing in the January issue on A. M. A. dues, we have received a reply from the A. M. A. Membership Division stating that "we have marked each doctor's record here exempt from payment of membership dues. In all instances when the *Journal A. M. A.* has been mailed it will be discontinued for these exempt members." That Journal can be subscribed for at the regular price of $15 per annum, but these exempt members will still receive the *Delaware State Medical Journal*. Those members who attain the age of 70 in 1952 will become A. M. A. exempt next January 1st, and if they also have been members of the Medical Society of Delaware for 30 years they will also become exempt from Delaware state and county dues, as honorary (H) members.

The list of Delaware members now exempt is:

NEW CASTLE COUNTY

Banton, Conwell, Wilmington
Chipman, I. Lewis, Sr., Wilmington (H)
Compton, Arthur G., Wilmington
Downes, John R., Newark (H)
Ellegood, Robert E., Wilmington (H)
Ellis, Walter W., Delaware City (H)
Forrest, George W. K., Wilmington (H)
Gruver, Arthur B., Wilmington
Kraemer, William H., Wilmington (H)
LaMotte, William O., Sr., Wilm. (H)
Lewis, Dorsey W., Middletown (H)
Pearson, G. Burton, Wilmington (H)
Rovitti, Peter A. M., Wilmington (H)
Samuel, Meredith I., Wilmington (H)
Springer, Harold L., Wilmington (H)
Vaughan, Edward M., Middletown (H)
Ericksen, George N., Wilmington
King, John F. W., Wilmington

KENT COUNTY

Marshall, William J., Milford (H)

SUSSEX COUNTY

Allen, Ira A. B., Seaford
Beebe, James, Sr., Lewes (H)
Hocker, Ulysses W., Lewes (H)
James, Oliver V., Milford (H)
Marine, David, Rehoboth
Riggin, Howard S., Seaford
Schwedenberg, Theodore, Seaford

GREETINGS

To the *Maryland State Medical Journal*, Vol. 1, No. 1, January, 1952 has reached our desk, and we welcome with open arms this newcomer in the ranks of the state medical journals, which conforms in contents and format with the other state journals and is a "beautiful job," with the highest standards exemplified. The editor is our old friend, Dr. George H. Yeager, of Baltimore, secretary of the Medical and Chirurgical Faculty of the State of Maryland, and to this new skipper and his associates the Delaware editor, now the senior in the field of state medical journalism, wishes long life and prosperity.

To the *Journal of the Student American Medical Association*. This is the official organ of the year-old SAMA, and is designed to provide information on the scientific and socio-economic sides of medicine, independent of partisan politics and organizational domination. Published at the AMA headquarters in Chicago (October through June), the price is $3.50 per year, but it is distributed *free* to American medical students and internes, some 33,000 of them. This may seem costly, but if it succeeds in educating medically and in indoctrinating, especially in good PR techniques, our doctors of tomorrow, we will say it is one of the smartest moves the AMA has made in many years.

BOOK REVIEWS

Introduction to Medical Science. By Julius Jensen, Ph.D. and Henry W. Noller, M. D. Cloth. Pp. 533. Price, $5.75. St. Louis: C. V. Mosby Company, 1951.

This book is intended to introduce student nurses to medical science. General review questions, projects and references are given at the end of each unit with the intention of helping the student master the material.

It may be useful as a general review text; it certainly is not organized for teaching purposes because it does not discuss in any systematic and complete way any of the branches of medicine as it would be taught by the nursing arts. This book will be of value to instructors in the biological sciences as a source of general information in health, disease, and public health.

Rehabilitation Nursing. By Alice B. Morrissey, B. S., R. N. Cloth. Pp. 299. Price, $5.00. New York: G. P. Putnam's Sons, 1951.

This book is very complete on the methods of handling disabled and incapacitated patients in the hospital and in the out-patient departments. It concentrates upon the nursing care of individuals with specific disabilities. Many illustrations, both photographic and diagramatic, enhance the explanations of the text.

This should be a very useful text in the physical therapy, rehabilitation and occupational therapy departments where the nurse receives her practical experience in handling incapacitated patients.

The general increase in disabilities resulting from war and civilian accidents, as well as from the incapacities of old age, has placed an increased responsibility in the nursing profession in the teaching of their students to care for the physical and mental restoration of the physically handicapped.

The poor quality of paper used to print this book detracts from its importance.

An Introduction to Materia Medica and Pharmacology. By Elsie E. Krug, R. N., M. A. and Hugh Alister McGuigan, Ph. D., M. D. Sixth edition. Cloth. Pp. 612, with 37 illustrations and 10 color plates. Price $4.25. St. Louis: C. V. Mosby Company, 1951.

This text book for nurses has been brought up to date in accordance with changes, terminology and dosage in the United States Pharmacopeia XIV and National Formulary IX. The material is very well organized, and each chapter ends with a number of review questions and a number of references to the literature. A glossary is alphabetically arranged at the end of the book.

The first section of the book covers the orientation of the study of pharmacology; this is followed by the physiological and therapeutic action of drugs, and finally the pharmacology as it is related to each of the body systems is discussed.

The text is written for the nurse in understandable and concise terminology.

Penicillin Decade. By Lawrence Weld Smith, M.D., and Ann Dolan Walker, R. N. Cloth. Pp. 122. Price, $2.50. Washington, D. C.: Arundel Press, Inc., 1951.

This is a review of the literature regarding the principal published data relating to any untoward effects of penicillin therapy over the first decade of its clinical use. Three hundred and forty-two references are given which have been published between 1941 and January 1951. Most of the reactions occurred with the older impure forms of the drug and with the topical forms. However, the suggestion made by the authors that "antibiotics are only of value for the treatment of infections due to organisms sensitive to the specific antibiotics being employed" cannot be overlooked. A careful inquiry into the history of allergy in the patient is a wise precaution before penicillin injections are given.

Except for its historical value in the field, this book is of no importance to the clinician.

The Changing Years. By Madeline Gray. Cloth. Pp. 224. Price, $2.75. Garden City, N. Y.: Doubleday and Company, Inc., 1951.

This book is intended for the woman faced with the problems and the superstitions of the menopause. The erroneous theories that menopause will bring cancer, insanity, or a decrease in sexuality are explained plainly and intelligently. Women will find this a very valuable book in understanding the physiology of their bodies concerned with menstruation, reproduction, emotions, menopause and sex. The various hormones of the female and male are discussed in simple language so that the usual fears which uninformed persons have regarding the female and male "changes" are successfully removed from their minds. Chapters are devoted to "How Your Doctor Can Help You", "What to Do About Your Sex Life", "What to Do About Your Figure" and "Love After Forty."

A bibliography of doctors, books, and articles used as references is also given.

This is certainly a very useful book, not only for persons approaching forty, but also for physicians who act as family advisers. It is written in an informal lively style, giving case histories and quoting medical sources for scientific statements. The author has made an important contribution to a very important and practical life problem.

Statistics for Medical Students and Investigators in the Clinical and Biological Sciences. By Frederick J. Moore, M. D., Frank B. Cramer, and Robert G. Knowles, all of the Department of Experimental Medicine, University of Southern California School of Medicine. Pp. viii + 113. Cloth. Price, $3.25. Philadelphia: The Blakiston Company, 1951.

This attractive book contains the essentials of those statistical methods most needed by clinical investigators, together with some useful numerical tables. The treatment of all subjects is more concise than that usually found in texts, but the style and format are unusually clear.

After a preliminary discussion of experimental variation and its possible causes, the authors discuss the mean, the standard deviation, and how these and other statistics may be used to characterize experimental data. Examples from clinical research are used to illustrate the methods. It is in this section that the authors introduce a new and simple graphical method for describing a body of data, which should be extremely helpful to the clinical investigator: this is the method of the "normal equivalent deviate." If the experimental observations are normally distributed and are plotted on a graph by this method, they will fall on a straight line, from which the mean and standard deviation may be determined by inspection. If the data are not normally distributed, the non-normality can be detected by the same graphical method; in this way the usual tedious computations of skewness and kurtosis may frequently be avoided. The "normal-equivalent-deviate" method has been derived from Finney's probit concept, now widely used by tenants of dosage-mortality relationships; it represents a valuable contribution to the methodology of clinical research.

The authors now introduce the three most commonly used small-sample technics for testing the significance of differences between experimental treatments, beginning with the variance ratio, F. They emphasize that the other sampling distributions (chi-square and "student's" t) are special cases of F. These tests of significance presuppose normally distributed data. The authors indicate that most "raw" data are not normally distributed, and suggest several ways for processing or "transforming" the data so that normality may be achieved. The "normal-equivalent-deviate" method described above may be employed for the preliminary diagnosis of non-normality, and the transformation of "raw" data to common logarithms is usually indicated. The logarithmic transformation is perhaps less often justified, however, than the enthusiasm of the authors would indicate. I feel that intimate familiarity with the gathering of data in field, clinic, and laboratory is probably the best guide to judgment.

The final section is concerned, almost too briefly, with the general aspects of the design of experiments and presentation of results. Here, as throughout the text, one is pleasantly surprised by the ability of the authors to express themselves clearly and concisely. One could wish for more illustrative examples in this section and throughout the book, but it appeared to be desirable to authors and publisher to retain brevity.

The book is lithoprinted on good paper, but the binding is flimsy and takes fingermarks, and the right-hand margins are not justified. These minor defects do not, however, detract from the generally good format and content. This work may be recommended as the most useful treatment of its kind that has appeared in recent years.

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THE DIAGNOSIS AND TREATMENT OF CORONARY ARTERY DISEASE BY THE GENERAL PRACTITIONER*

A. Henry Clagett, Jr., M. D.,**
Wilmington, Del.

Coronary artery disease is a large and important portion of that No. 1 killer, heart disease. Except for an occasional patient who presents a diagnostic problem or one in whom the poor prognosis makes consultation desirable, these patients are handled throughout their entire course, and rightly so, by the family physician. His intimate knowledge of the family, their past and hereditary illnesses and their drug idiosyncrasies, places him in an enviable position which, by its very nature, is denied the specialist. On the other hand it is his responsibility to keep informed regarding the latest developments in diagnosis and treatment.

Etiology

With the exception of an occasional case due to some rare condition, disease of the coronary arteries is due to atherosclerosis. While it in turn appears to be related to fat metabolism, this is not yet proven beyond doubt and the cause of atherosclerosis admittedly is unknown.

Terminology

With the voluminous literature existing on this subject, it is understandable that confusion exists in terminology. The following nomenclature, while not original, has been helpful.

Coronary insufficiency. A state in which the coronary blood supply is inadequate to meet the metabolic needs of the myocardium. This is manifested by subjective symptoms and/or objective signs. While the basic condition may well be of long standing, the actual manifestations are typically of short duration, never over a few minutes; brought on by some factor—usually exercise or emotion—and relieved immediately upon removal of the existing cause. Angina of effort is the best example of this condition.

Coronary failure. This state (called coronary insufficiency by Master) differs from coronary insufficiency in the duration which is much greater. Objective signs and subjective symptoms persist over a prolonged period but there is no evidence of tissue necrosis as found in myocardial infarction.

Myocardial infarction. The end point of coronary insufficiency and coronary failure is infarction and necrosis of the myocardium.

Diagnosis

Coronary insufficiency. The description of angina of effort by Heberden remains a classic in that there has been none better to date. The pain—frequently described as a choking sensation or a misery—typically occurs substernally following a certain amount of exertion. Less exertion is necessary to produce the distress following a heavy meal or in walking against a cold wind. When the patient is emotionally upset, very little or at times no exertion at all precedes the pain. The patients usually are middle-aged men. Relief of the pain by rest or *immediate* relief by the sublingual administration of nitroglycerine or the inhalation of amyl nitrite confirms the diagnosis.

Most patients who seek the advice of the family physician do so because they desire relief from some symptom. In such an instance the diagnosis of coronary insufficiency (angina pectoris) can be established upon the history alone. This is helpful because the condition is remarkable by the absence of objective signs. While other evidence of cardiac disease may be present, coronary insufficiency frequently exists in a patient with normal blood pressure, normal heart size, no murmurs, and a normal electrocardiogram (ECG).

It therefore is apparent that the family

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*Presented at the Staff Meeting of the Beebe Hospital, Lewes, Delaware, January 17, 1952.

**Chief, Medical Service, V. A. Hospital.

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physician's knowledge of his patient's background is most important. In cases involving compensation, however, objective evidence would be highly desirable. Physicians fortunate enough to observe a patient during an attack noticed that some showed ECG changes which cleared up with the relief from pain. Some physicians went so far as to have the patient exercise to the point of producing pain and then taking an ECG. While they frequently were successful in obtaining an abnormal record, they soon found that it was dangerous to produce such an attack at will. Master has devised a graduated exercise of degree insufficient to cause harm but which frequently causes ECG changes if the coronary arteries are diseased. This test sometimes is of help but it must be remembered that while a positive test is diagnostic of coronary insufficiency, a negative test by no means excludes the diagnosis.

The ECG changes consist of a depression of the ST segments and or inversion of the T waves in the epicardial leads. Elevated ST segments and or Q waves are not seen in these leads in uncomplicated coronary insufficiency. The changes are evanescent.

Coronary failure. This condition is a state of prolonged coronary insufficiency. The pain and ECG changes last for hours or even days. It is differentiated from myocardial infarction by the lack of signs of myocardial necrosis and the ECG changes which are those of coronary insufficiency rather than infarction. Unlike coronary insufficiency, coronary failure usually has no demonstrable relationship to exertion.

A form of coronary insufficiency or failure is sometimes seen in patients with anemia. While technically a relative coronary insufficiency (normal coronary arteries—the defect being in the oxygen carrying capacity of the blood), these patients probably have underlying coronary disease which remains asymptomatic as long as the hemoglobin level is satisfactory. This suspicion is backed by the facts that, with the exception of acute massive hemorrhage, this condition usually is seen in elderly individuals and that there is no quantitative correlation between the hemoglobin level and the ECG changes.

Myocardial infarction. This disease often was mistaken in the past for acute indigestion because it frequently occurs following a heavy meal, the pain typically substernal may be epigastric, and vomiting combined with a cold clammy skin is common. The pain usually increases in severity, frequently becoming unbearable, and the patient restlessly moves about in agony until relieved by the administration of a narcotic. This is in striking contrast to the patient with coronary insufficiency who stops, fixed in one position, with the knowledge that any motion will delay the subsidence of his pain.

While the ECG may show atypical changes, this is less likely since the almost universal adoption of multiple exploratory leads. It is now usually possible to diagnose with accuracy the presence or absence of infarction.

A most important differential point is the presence of signs of myocardial necrosis. It is largely the intensity and duration of these signs that give the most accurate indication of the size, severity, and prognosis of the infarct. On or about the third day, the necrosis will cause slight fever, leucocytosis, and increased sedimentation rate. The size of the infarct can be estimated by correlation of the degree of abnormality of these tests with the ECG; its healing by the time required for their return to or toward normal. In general, fever, leucocytosis, or tachycardia persisting over one week is a poor prognostic sign. On the other hand, the sedimentation rate, while occasionally returning to normal in a week or ten days, frequently remains elevated for a period greatly exceeding the abnormality of the other tests. A patient should not be kept in bed or a poor prognosis given solely on the basis of an elevated sedimentation rate.

Treatment

Ambulatory patients with coronary artery disease should observe some basic rules of general hygiene. They should obtain an abundance of rest, both physical and mental. They should be properly clothed and should avoid all extremes of temperature. They should especially avoid cold weather and cold bathing. Their diet, while balanced and nutritious, should be such as to prevent obesity and constipation should be avoided. While in general they should avoid physical exertion, each patient should be a law unto himself and should be allowed activity to a point short of that amount known to cause pain. Shoveling snow, cutting grass, and changing a tire should be definitely prohibited.

The following therapeutic notes are admittedly incomplete. Furthermore, their scope is general in nature and each patient must be treated in an individual manner.

Coronary insufficiency. If the coronary insufficiency is due to anemia, it is obvious that the anemia should be immediately corrected.

The time honored treatment of nitroglycerine under the tongue is still by far the best treatment for the pain of angina pectoris. Many patients, and even physicians, have a fear of taking "too many nitroglycerine tablets". Fortunately, there is no cumulative effect and the patient should be reassured that it is perfectly safe for him to take as many tablets as necessary to give him relief. Some patients complain of the side effects of the drug, notably the severe headache. As a general rule if the patient would rather have the chest pain than the headache, the coronary disease cannot be too severe.

Nitroglycerine also may be used to advantage prophylactically. Patients who know that pain will follow a certain amount of exertion but who have an urgent reason to undergo this exertion may take a nitroglycerine tablet immediately prior to its performance. By this means, many people are able to carry on a more normal existence. Nitroglycerine should not be given on a regular schedule but only when needed for pain or its prevention. The dose also is an individual matter and the smallest amount that produces relief should be used.

The longer acting nitrites are ineffectual. Alcohol is of questionable value as a coronary dilator; symptomatically, however, it is of definite value. Care must be taken in its use as it is very easy for the treatment to be more incapacitating than the disease from the standpoint of employability.

Other vasodilator drugs have had their run of popularity. Recently, Khellin has been the subject of conflicting reports. While apparently of benefit to a few patients, such good properties are overshadowed by its side effects (nausea and vomiting) which are present in a majority of patients.

Some patients who have been incapacitated due to severe and frequent attacks of coronary insufficiency have obtained relief from radioactive iodine. This is a continuation of the thesis which accounted in the past for treatment by thyroidectomy and the anti-thyroid drugs. This obviously is not a method to be used by the general practitioner and it should be noted that its most enthusiastic proponents realize its limitations and that it certainly is not a treatment for all patients with angina pectoris.

Some authors claim a vasodilator action for dicumarol. Whether or not this is true, the fact remains that patients have obtained dramatic relief from its use. The usual precautions must be taken and though ambulatory, the patient must have frequent prothrombin determinations.

More recently, heparin has been recommended in doses of 50 mg. intramuscularly two days weekly. Its use is suggested following the observation that heparin causes a decrease in alimentary lipemia. Its use certainly is safer than that of dicumarol and it can be prescribed with safety without unusual laboratory tests.

Surgery aimed at cutting the nerve pathways of cardiac pain has been successful in some patients. It should be considered in those whose pain is severe enough to be incapacitating. It should be explained to the patient before operation that the disease still will be present and that the patient will continue to receive a sensation as a warning and that he should obey that sensation as though it were the pain. The *only* effect of surgery is the relief of unbearable pain; the patient should not expect to increase his activities post-operatively.

Coronary failure. Rest in bed is practically the only addition to the above-mentioned therapy. If for no other reason, this is justified on the basis that the diagnosis of myocardial infarction may not be immediately ruled out and it is safest to keep the patient at bed rest. If this bed rest is to be absolute, anticoagulant therapy should be given if possible.

Myocardial infarction. The patient should be at absolute bed rest for a minimum of two weeks; ambulation should be *gradual* and should begin after the ECG and other laboratory tests show evidence of stabilization. The one exception is the sedimentation rate; it would be unwise to keep the patient at bed rest until the sedimentation rate returns to normal.

Morphine or other narcotics should be used in doses sufficient to control the pain and later to keep the patient quiet during the first two weeks. Oxygen is desirable during the first few days. The physician should take into account the psychic effect of the oxygen administration upon the patient and, knowing his patient, should decide in the milder attacks which would do the least harm, the lack of oxygen or the psychic effect of its administration. In the more severe cases oxygen should be used without hesitation.

Anticoagulant therapy is definitely indicated and ideally heparin and dicumarol should be started concomitantly, the heparin being discontinued when there is evidence of the dicumarol taking effect. In hospitals where the laboratory is unable to perform an accurate prothrombin time or in the home, heparin should be used without dicumarol. Heparin is by far the safer of the two drugs and, except for its expense, could well displace dicumarol. The question frequently arises as to when the anticoagulant drugs should be discontinued. The answer is simple: when the patient reaches a stage of ambulation where it is safely felt he will not return to absolute bed rest, the drugs can be gradually withdrawn.

Coronary dilator drugs are recommended by some authors. Of these, the one most likely to be effective is papaverine hydrochloride. The intravenous route is preferable and the dose is from 1 to $1\frac{1}{2}$ grains diluted. After the acute phase, $1\frac{1}{2}$ to 3 grains may be given by mouth every four hours.

The diet during the acute stage should be very light and for the most part liquid. The patient should not be allowed to feed himself during the first few days.

The care of the bowels is most important as any straining on the part of the patient is to be strictly avoided. This bowel care again is an individual matter depending upon the patient and the treating team. The physician should palpate the abdomen daily and should prescribe an enema or laxative—that which in his opinion will be less disturbing to the patient—only when there is evidence of distention. The fact that the patient has not had a bowel movement daily is not an indication for intervention.

All patients with acute myocardial infarction should have absolute bed rest for a period of two weeks because it is during this time that the complications are most likely to occur. Following this, however, each patient's care should be individualized. Those with a mild infarction (minimal fever, leucocytosis, and sedimentation rate) can start gradual ambulation immediately following the minimum two weeks' period; those with severe infarction or complications should be kept at rest until signs of stabilization are obvious.

COMPLICATIONS

While strictly speaking not a complication, myocardial infarction is the most feared and most common end point of coronary insufficiency and failure. This is merely another reason for the favorable attitude toward the anticoagulant drugs in the treatment of coronary insufficiency and failure.

COMPLICATIONS OF MYOCARDIAL INFARCTION

Rupture of the myocardium. This fatal complication occurs in severe infarcts involving the entire thickness of the myocardium. It is most likely to occur during the first two weeks and following some exertion. The logical treatment is prevention and this is done by keeping the patient at absolute bed rest during the dangerous period.

Heart failure. This is a most discouraging complication as the prognosis is extremely poor. It should be treated by bed rest, low sodium diet, and mercurial diuretics. If these methods after fair trial have been ineffectual digitalis should be used despite its dangers. Digitalis is a drug known to cause hyperexcitability of the myocardium and should be used with great care. In uncomplicated massive infarction, a few basal rales frequently are heard on the first and second day. These probably are due to the severe onset of the condition and clear up once circulatory balance has been regained. They alone should not be interpreted as cause for treatment of heart failure.

Arrhythmias. The irritable myocardium is subject to various arrhythmias. Many of these are benign but those of ventricular origin are serious due to the tendency of progression from ventricular premature beats to paroxysmal ventricular tachycardia to ventricular fibrillation, the latter being a fatal complication.

If a patient develops an occasional ventricular premature beat following infarction, small doses of quinidine should be given by mouth (3 grains t.i.d.). This dose should be increased as necessary until the ventricular premature beats are controlled. If the patient's rhythm is ventricular tachycardia when first seen, a dose of 12 grains of quinidine may be given by mouth but if there is no apparent effect within an hour, the severity of the condition calls for drastic treatment and quinidine should be given intravenously. The practitioner should be aware of the hazards and additional risk of this extreme procedure. While procaine amide is enjoying a wave of popularity, the published data do not support the popular claim that it is a safer drug than quinidine and it is felt that quinidine in the hands of one experienced in its use is the drug of choice.

Conclusions

A brief summary of the present thoughts in the diagnosis and treatment of coronary artery disease has been presented. This grave disease is one with which the family physician should be intimately acquainted as it is he who treats the vast majority of cases.

THE ROLE OF THE GENERAL PRACTITIONER IN THE DIAGNOSIS, TREATMENT OF FRACTURES OF THE HIP

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Fracture of the hip in an elderly individual, until recently, was a serious condition with a grave prognosis due to complications, usually pulmonary, which developed during the prolonged period of bed rest incident to immobilization of the fracture. The marked improvement in the outlook is due primarily to the improved orthopedic surgery which permits early ambulation and secondarily, but equally important, the improved state of anesthesiology which permits major surgery to be performed upon persons ordinarily looked upon as poor operative risks.

Diagnosis

Fracture of the hip should be suspected in every elderly patient who sustains a fall. There frequently will be but minor complaints referable to the hip and it actually is possible for a patient with an impacted fracture to bear weight on the injured limb. A minor fall or merely slipping on a rug may be sufficient to cause such a fracture as these bones may break due to the tortional stress laid upon them during the fall rather than the actual impact of the body against the floor.

The cardinal physical signs of fracture of the hip are shortness of the affected leg, external rotation with the knee held in flexion, and discrepancies in Nelaton's Test Line and Bryant's Triangle. The trochanter is near the anterior superior spine of the lium and swelling may be present.

While the above findings are classical and diagnostic, it must be remembered that many variations occur and that the signs are notoriously absent if the fracture is impacted. There may be very little shortness and the swelling may obscure other findings.

The absence of disability does not rule out fracture and the threshold of suspicion should be high in elderly individuals following a fall. All such patients should have an x-ray examination of the hip.

Treatment

The first item in the proper treatment is an early diagnosis. Once made, the patient should immediately be hospitalized so that preparation can be made for internal fixation as soon as the initial shock has worn off and the patient has been properly prepared for anesthesia. This treatment is without question a surgical emergency and the patient deserves attention equal to one with an acute abdomen.

The operation consists of alignment of the fragments and immobilization with metallic nail, screws, or plate and is accomplished under x-ray guidance.

The patient is allowed out of bed or at least allowed to sit on the side of the bed on the first or second post-operative day. Ambulation with crutches but without weight bearing usually is possible by the third or fourth postoperative day.

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Discussion

Early ambulation, permitted by proper surgical treatment, has been the factor to cause the decrease in mortality in elderly patients suffering from a fracture of the hip. The complications so frequently seen before this mode of treatment—hypostatic pneumonia, ascending urinary infection, and decubitus ulcers—are practically unheard of if the proper diagnosis is made immediately and the proper treatment is instituted.

Summary and Conclusions

Fracture of the hip, a geriatric disease with a high mortality in the past due to complications, is now amenable to surgical treatment with the advantage of early ambulation and consequent elimination of the hypostatic complication of the past. To be effective, the proper treatment should be instituted immediately and it is the responsibility of the general practitioner who first sees the patient to make the diagnosis without undue, and deadly, delay.

DELAYED SPLENIC RUPTURE FOLLOWING TRAUMA

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Splenic rupture with intra-abdominal hemorrhage is a serious problem which is relatively common, particularly with the great increase in present day travel. The subject of delayed splenic rupture following trauma is presented because of the magnitude in the number of accidents sustained and to keep it ever prominent in the mind of the physician and surgeon who may be called upon to administer such a case.

Classification, Incidence and Type of Accident

This syndrome can be divided clinically into two types, (a) the immediate, and (b) the delayed. Immediate hemorrhage can be considered as that which occurs under 48 hours, and delayed that which occurs after 48 hours. This injury can occur at any age but is most commonly noted between the ages of ten and fifty years. Delayed hemorrhage occurs in about 14 percent of all cases of splenic rupture.

Fifty per cent of these show signs in less than 7 days and 25 per cent in the second week after trauma.[1-10] Byrne[2-3] has reported a series of 101 cases, seventy-four were operated within 24 hours following trauma and were considered immediate; however, twenty-seven were operated upon from 48 hours to 21 days following trauma, and were considered to have delayed hemorrhage.

The type of accident may reveal a fall, kick, blow, penetrating wound or vehicle accident. The latter; that is, injuries sustained in or from automobile accidents either as a pedestrian or passenger, rank first in the list of causes of this injury. Subcutaneous injuries produced by indirect or direct violence are much more common than open wounds. In certain cases, a history of trauma cannot be elicited, therefore, it is important to mention that cases of "spontaneous rupture" can occur when the spleen is the site of concomitant disease, such as existing or pre-existing malaria, typhoid, leukemia, infectious[4-5] mononucleosis, etc.

Signs, Symptoms and Diagnosis

It should be evident from the outset therefore that diagnosis presents many difficulties and pitfalls because of the co-existence of multiple injuries, fractures, lacerations and contusions which require immediate attention, and the possibility of an intra-abdominal emergency is not considered. Shock in varying degrees, and alcoholic intoxication may and can mask the picture.

In delayed rupture signs and symptoms become apparent after the intrasplenic bleeding reach such proportions to bring about a break in the capsule with intra-abdominal hemorrhage. This finding parallels that described by McIndoe.[6] When this occurs following trauma, there may be abdominal pain, tenderness and local rigidity in the left upper quadrant, plus reference of the pain to the left shoulder (Kehr's sign). These are the three most common clinical findings in the presence of a traumatized spleen. With intra-abdominal hemorrhage, symptoms of blood loss and shock occur. These may and can vary in degree, as was previously mentioned. As blood accumulates in the abdominal cavity, dullness to percussion, due to large clots is elicited, especially in the splenic area associated with a shifting dullness in the right flank. This accumulation of blood lends itself to the use of abdominal paracentesis as an additional means of diagnosis. Extreme caution must be exercised in performing this procedure, and multiple taps are recommended as a single tap may be misleading. Its use should be reserved for questionable cases. Byrne[2-3] in his series had occasion to use abdominal tap in 12 questionable cases with positive results and confirmation of diagnosis in 11, and in the other case, a false positive result was obtained. Wright and Prigot[7] have reported similar success in their cases.

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X-ray findings on scout film examination of the abdomen reveal an increased density in the left upper quadrant, obliteration of the splenic shadow, elevation of the left diaphragm, displacement of the stomach toward the right and suggestion of serrations along the greater curvature side of the fundus and evidence of free liquid (blood) between loops of intestines.[8]

Blood pressure readings are not consistently lowered in these cases and follow variations in the degree of shock present.

The laboratory results, particularly of the blood are often suggestive and helpful. Erythrocyte count and homeglobin are low, leukocyte count is increased up to and above 18,000 per cubic millimeter. Hematocrit shows hemoconcentration due to blood loss. Serial or repeated blood counts and blood pressure determinations are recommended in following these cases of delayed hemorrhage.

Pathology

In rupture of the spleen, the gross pathology may consist of fragmentation of the spleen, detachment of the pedicle, numerous deep lacerations or a single rent, small peripheral tears that may be plugged by hematomas or omentum and subcapsular hemorrhage. The latter two may be silent for from twenty-four hours to two weeks or more, at which time, massive hemorrhage may occur. This is called "delayed rupture".[9]

In 101 cases of splenectomy reported from the Los Angeles County General Hospital from 1936 to 1946, the types of lacerations according to gross pathology were as follows: single laceration —15, multiple or stellate lacerations —22, upper pole injury —17, lower pole injury—17, hilar or pedicle laceration —5, bisected spleen —10, macerated spleen —9, splenic tumor with rupture of the capsule —16.[2-3]

Delayed rupture occurs then, in those cases in which the laceration is in the parenchyma of the organ without injury to the capsule. This hemorrhage is intra-splenic or intra-capsular and may form single or multiple hematomas and a tumor mass. With increased pressure from within or trauma, the hemorrhage continues until such time as the capsule distends and ruptures. Microscopically, the capsule will show evidence of having been stripped from the underlying parenchyma by the intra-splenic hemorrhage; other than for hemorrhage, the splenic tissue is normal microscopically.

Treatment

Prompt diagnosis, plus supportive therapy for shock, adequate blood replacement and immediate surgery with splenectomy is the treatment. There is no place for delay or conservatism. Without treatment, the mortality in subcutaneous injuries of the spleen is very high, over 90 per cent according to most reports. [2-6-10]

The method of approach and type of incision is a matter of personal choice, whether it be via the abdomen and/or the chest. An ample left rectus incision is recommended because it affords adequate exposure and permits thorough exploration of the abdominal cavity for possible concomitant injuries. The spleen should be delivered into the wound by rotation of the organ as this permits easier accessibility of the vessels and prevents injury to other structures, particularly the tail of the pancreas.

The post operative mortality has been reported in the neighborhood of 17 per cent.[2-3] Various figures have been reported between 40 per cent by Guy, 33.2 per cent by Michelson, 16.8 per cent by Byrne and 9.5 per cent by Requarth.[11]

The improvement in these results has followed in recent years the availability and greater use of blood, improved and prompt diagnosis plus immediate surgery.

CASE REPORT

H. S. No. 2886. A 23-year-old white Navy veteran was injured in an automobile accident on 5/15/51 at 12:30 a.m. He was rendered unconscious and was taken to a local hospital where the patient received emergency treatment and was admitted. Approximately eleven hours later, he regained consciousness and complained of pain in his abdomen and left shoulder. Because of multiple contusions and lacerations, his pain was attributed to a fracture of his left shoulder and fracture of left ribs. After 48 hours he was entirely asymptomatic and on 5/23/51 the patient was discharged.

On 5/24/51, the patient presented himself at this hospital because of pain in his right knee; however, examination and x-rays were reported as negative.

On 5/29/51 at 9:30 a.m., while walking along the street, the patient felt a severe pain in his abdomen. The pain became quite severe rapidly and caused the patient to become nauseated but he did not vomit. He returned home; however, the pain became most severe and was now accompanied by pain in his left shoulder. At about 11:30 a.m., the patient was brought to this hospital.

Past medical history was non-contributory and the patient denied ever having had malaria, typhoid, etc.

On physical examination, the patient appeared acutely ill and in the state of shock: T-97°; P-84; BP 90/50 (right arm). His skin was moist, dusky and clammy. The left clavicle appeared prominent and felt irregular on palpation. Lungs were clear but expansion was limited in the left side and there was evidence of a bruise over the left lower ribs with associated tenderness. Heart and sounds were normal, abdomen was tender throughout but especially so in the left upper quadrant. There was rigidity over the entire left abdomen. Peristalsis was audible but hypoactive. There was dullness to percussion in the left upper abdomen.

A diagnosis of rupture of the spleen of the delayed type was made. Emergency laboratory studies revealed: red blood count—3,290,000, hemoglobin 12.5 gms., white blood count—11,300, polymorphonuclear cells 76 per cent, of which 20 per cent were stabs, hematocrit 38 per cent, prothrombin time 90 per cent, blood type: A, Rh positive. X-rays of the chest and clavicles were negative for fractures.

A scout film of the abdomen showed an elevation of the left diaphragm, serrations along the greater curvature of the stomach and a prominently outlined spleen.

The patient was prepared for emergency surgery and at operation, using a left rectus incision, the abdomen was found to be filled with considerable amount of fresh blood with numerous large clots. Further investigation revealed an enlarged spleen containing a hematoma about the size of a baseball in its superior pole, with an associated severe laceration across the hilar area involving many of the vessels which were bleeding freely. The spleen was rapidly freed, rotated medially and delivered into the operative field. The vessels were isolated and clamped in two groups and doubly ligated and the spleen removed. The patient received 1,000 cc's of 5 per cent glucose in water during surgery, followed by 1,000 cc's of type A Rh positive blood. On the second post operative day, his red blood count was 5,490,000, hemoglobin 14 gms., white blood count 23,500, —polymorphonuclear cells 87 per cent, of which 20 per cent were stabs. On the sixth post-operative day, the red blood count was 5,830,000, hemoglobin 16.5 gms., white blood count 16,700, polymorphonuclears 57 per cent, of which 3 per cent were stabs. His post operative course was uneventful. The sutures were removed routinely and his wound healed well.

On 6/7/51, the patient was discharged cured and to the care of his family doctor. A recent six month follow-up revealed the patient to be in good health and working.

SUMMARY

Traumatic rupture of the spleen with intra-abdominal hemorrhage is a serious surgical problem requiring prompt diagnosis, surgical intervention and splenectomy. The condition is relatively common. Hemorrhage can be direct or immediate, and delayed. A discussion of the delayed type is presented including a case report. Diagnosis and treatment must be prompt. There is no place for conservatism. Splenectomy is the treatment of choice.

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KIDNEY CHANGES IN GOUT

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Gout is a disorder of purine metabolism characterized by hyperuricemia and recurrent acute arthritis eventually associated with urate deposits in cartilage, joint spaces, bursae, tendons, kidneys and other tissues.

Extensive studies of the clinical manifestations of this disease have been made by Talbott,[1] Bauer and Klemperer,[2] and Hench.[3] The association of renal dysfunction with gout is mentioned in all the descriptions and the incidence of renal impairment ranges from 22 to 82 per cent of the cases. The nature of this frequent renal damage has been controversial and confusing for many years. The following case report illustrates the specific renal lesion of gout and the accessory factors in the production of renal failure.

Case Report

C. L. (A-393). A 65-year-old Negro was admitted to the Veterans Administration Hospital with complaints of shortness of breath, swelling of his legs and pains in all joints of his extremities. He had five prior admissions over a period of two years for recurrent arthritis involving his elbows, wrists, hands, knees and great toes. Colchicine therapy had given conspicuous relief of his symptoms, but there was residual pain and stiffness of the joints between attacks. Other significant findings on previous admissions were x-ray evidence of demineralization of the bones of the ankles, feet and hands with hypertrophic changes in the joints. The blood pressure was 155/105; sedimentation rate of 40 mm. in one hour; blood urea nitrogen ranging from 25 to 35 mg. per 100 cc.; and uric acid 10.6 mg. to 13 mg. per 100 cc. The urine had a maximum specific gravity of 1.015 and gave a ++ test for albumin. The sediment contained numerous casts and white blood cells.

On this final hospital admission the eye grounds showed a +++ retinopathy. Tophi were present on the joints of the hands and elbows. There was massive edema of both legs and there was evidence of phlebothrombosis of the left saphenous and femoral veins. The urine had a specific gravity of 1.007; +++ albumin and 10 white blood cells and 1 to 5 erythrocytes per high power field. Urea nitrogen was 27 mg. and the uric acid 10.5 mg. per 100 cc. Blood pressure was 150/110.

The patient was given routine anticoagulant therapy and two days later developed cardiac failure and pulmonary infarction in the right lung. This was accompanied by severe abdominal distention and vomiting. Blood urea nitrogen rose to 84 mg. and uric acid to 11.2 mg. per 100 cc. He developed severe dyspnea and pulmonary edema and died on the tenth hospital day.

Post-mortem examination revealed fibrinous pleuritis; pulmonary infarction and pneumonia in the right lung; coronary artery sclerosis with focal myocardial fibrosis; cardiac hypertrophy and dilatation; and thrombosis of the left saphenous vein extending into the femoral and iliac veins. There were extensive urate deposits in the joint surfaces of the knees, elbows, wrists, fingers, ankles and great toes.

The right kidney weighed 240 grams and the left 210 grams. The capsules stripped with difficulty and the kidneys were similar in appearance. There were numerous 2 mm. to 5 mm. in diameter cysts throughout a markedly red, coarsely granular surface in which there were scattered large depressed scars. On section the cortex was irregular in thickness. The pyamids stood out prominently due to yellow-brown linear gritty streaks. The pelves and ureters were thickened and congested.

Microscopic examination revealed deposits of sodium acid urate crystals most conspicuous in the medulla. The crystals conformed to the shape and direction of the tubules and only fragments of tubular epithelium were preserved. The crystals were disposed in sheaves with foreign body giant cells at the periphery. There was an accompanying infiltration of mononuclear cells, fibroblasts and surrounding interstitial fibrosis. (Fig. 1). In other areas the crystals had disintegrated into amorphous urates surrounded by polymorphonuclear leucocytes and forming casts filling the lumen and distorting the collecting tubules. The adjacent parenchyma contained discrete abscesses. (Fig. 2). Throughout the remainder of the kidney there was hyaline degeneration and thickening of the arterioles; cortical clusters of fibrotic glomeruli; "colloid casts" in the tubules and interstitial fibrosis.

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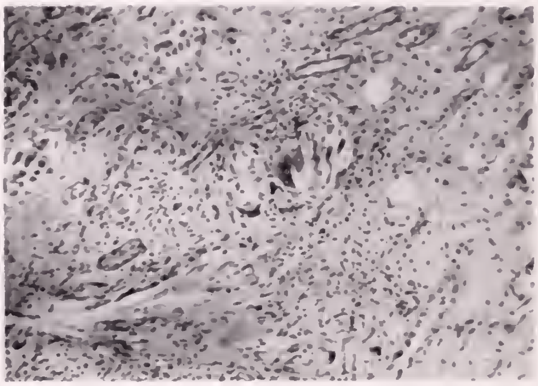

Fig. 1. Urate Crystals, Tubular Destruction, Giant Cells and Granulomatous Reaction.

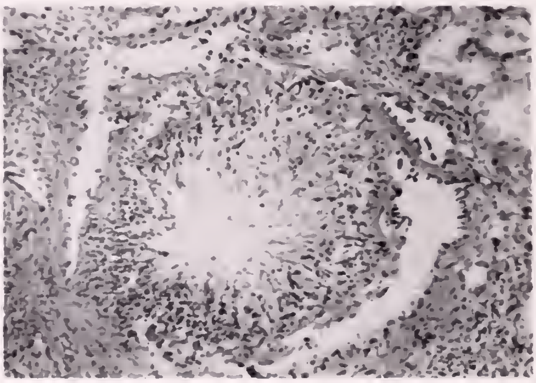

Fig. 2. Urate and Polymorphonuclear Casts and Surrounding Interstitial Inflammatory Reaction.

Comment

The pathogenesis of renal dysfunction in gout has been a subject of much dispute. The work of Brown and Mallory[4] emphasizes the obstructive effect of deposits of urate crystals in the kidney. The masses of urate crystals collect in the apices of the pyramids which are critical bottlenecks in the urinary outflow. The stasis produced in the collecting tubules leads to superimposed localization of pyogenic organisms with subsequent development of acute pyelonephritis. Repeated episodes of acute pyelonephritis may occur in these kidneys made vulnerable by obstruction until renal failure ensues. Other pathological descriptions have stressed the contracted granular kidney of nephrosclerosis as the lesion found in gout. Recently, Allen[5] is of the opinion that the renal dysfunction in gout is not the specific effect of the abnormal metabolism of uric acid, but mentions that it would be incorrect to conclude that urate deposits in the kidney are not detrimental. According to him, the renal damage commonly present in kidneys of gouty patients are those incidental to the obesity, arteriosclerosis, hypertension and age which characterizes such patients. Associated vascular disease of the kidney is one of the major accessory components. The specific obstructive pyelonephritic element caused by the urates is merely one of several factors in the renal impairment.

The renal lesions in our case of chronic gout reported above were of particular interest in that it tends to support both concepts of pathogenesis as elaborated in the preceding statements. The effect of the persistent elevated uric acid level in the blood and increased excretion over a period of years was revealed by the deposition of urates and obstruction in the collecting tubules. It has also showed the subsequent healed and chronic pyelonephritis with deposits of urates in small abscesses. Arteriosclerosis and gout which have a cause and effect as well as hereditary constitutional relationship manifested itself as nephrosclerosis accentuated by hypertension. The pathogenesis of the renal impairment in our case can be conjectured on the factors of obstructive nephropathy due to urate deposits in the tubules, pyelonephritis and the associated generalized vascular disease.

Summary

A case of chronic gout with detailed description of the kidney pathology is presented. The specific obstructive renal lesion of gout is illustrated. Accessory factors in the production of renal failure in patients with gout are discussed.

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RHEUMATOID SPONDYLITIS

A Report Of Thirty Cases

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The frequency with which rheumatoid spondylitis is encountered in young adult males is surprisingly high. Eighteen per cent of patients admitted to an Army general hospital with complaints referable to the low back region were found to have rheumatoid spondylitis.[1] In a three-year period thirty patients have been observed at this hospital with this disease. Since treatment, especially roentgen therapy, has been found effective in alleviating symptomatology and apparently interrupting the progress of the disease in an appreciable number of cases, a prompt diagnosis is important.

Although rheumatoid spondylitis is the designation for this disease recommended by the American Rheumatism Association, many synonyms frequently are encountered. These include Von Bechterew's disease, ankylosing spondylitis, Marie-Strumpell's disease, spondylitis ossificans ligamentosa of Knaggs, adolescent or juvenile spondylitis, spondylo-arthritis and spondylitis ankylopitica.

Pathology

Rheumatoid spondylitis is a chronic, usually progressive disease, the fundamental lesions of which occur in the synovial joints of the spine and adjacent areas. The process almost always begins in the sacro-iliac joints and then may spread cephalad to involve the synovial joints of the lumbar, thoracic and cervical spine and the costovertebral articulations. The intervertebral discs are not affected and the vertebral bodies are spared except for secondary demineralization. Calcific and later osseous changes develop in the paraspinal ligaments with resulting contractures, deformities and ankylosis.

In approximately 20 per cent of patients, typical rheumatoid arthritis of the peripheral joints co-exists. This occurred in five of this group of thirty cases.

Etiology

The etiology of rheumatoid spondylitis is unknown. Most investigators favor the concept that it is not a separate pathologic entity but simply an expression of rheumatoid arthritis as it involves the spine. Several patients dated their first symptoms to previous injury, but it is probable that in these cases trauma merely served to call to their attention a condition already existing. Focal infections, gonorrhea and emotional stress cannot be incriminated as etiological factors. Although brucellosis may produce a sacro-iliac arthritis, this disease has no relationship to rheumatoid spondylitis. A strong hereditary factor is claimed to be present and it is said that the familial incidence is almost 100 times that of the general population.[2] In none of these thirty cases, however, could a family history of rheumatoid spondylitis be elicited.

Incidence

All observers stress the preponderance of rheumatoid spondylitis in males. In this series only one patient was female, but due to the disparity in the admission rates between the two sexes in a Veterans Administration Hospital, no valid conclusion can be drawn from this observation.

Only one of the thirty patients was a Negro. This appears statistically significant since 15 per cent of admissions to this hospital are Negroes.

The vast majority of patients develop symptoms of rheumatoid spondylitis during the third decade. In 26, or 86.6 per cent of this group, symptoms had their onset between the ages of 20 and 30; in 3, or 10 per cent, they occurred before the age of 20; and in 1, or 3.3 per cent, symptoms began after the age of 30. The age span in this respect was 18 to 34 years. These figures coincide with the findings of others.

Signs and Symptoms

Although the pattern of symptomatology in rheumatoid spondylitis is fairly characteristic, it may vary depending on the severity of the disease, its duration and the rate of progression.

The onset is usually insidious and the first complaints are referable to the lower part of the back. Pain is the most frequent presenting complaint and is commonly described as an ache. Occasionally it may be lancinating and have a sciatic distribution. Typically the pain varies, being worse in the morning, at times even awakening the patient from sleep, and tending to ease as the day progresses and activities increase. Symptom-free periods lasting for days may occur.

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As the disease progresses, the pain becomes more constant and severe, and the patient notices increasing stiffness, first of the lower spine and later of the entire back. Stiffness is secondary to both muscle spasm and actual organic changes which result in some degree of fixation of the joints.

With further extension of the disease process in the lumbar spine, this portion of the back assumes a flattened or "ironed-out" appearance with loss of the normal lumbar curve. The patient tends to flex his body at the hips, the spine remaining immobile. It becomes necessary for him to squat instead of stoop to reach objects at floor level. Others often become aware of changes in posture or motion of the spine before they are noticed by the patient.

When the costovertebral joints and thoracic spine become involved, rigidity of the thoracic cage results. There is loss of expansion of the entire chest on inspiration, vital capacity decreases and respiration becomes entirely diaphragmatic. The patient may be a victim of frequent and recurrent episodes of pleuro-pulmonary disease and is a poor risk for anesthesia and abdominal operations.[3]

The cervical spine usually is last to show changes. Eventually there is inability to rotate the head, producing a very characteristic movement when the patient attempts to look to the side and backward since the entire torso turns with the head.

Lumbar, thoracic and cervical spines are involved in that order. Rarely is that sequence of events disturbed so that the disease limits itself to the cervical or thoracic spines without lumbar involvement. The reverse does not apply since rheumatoid spondylitis may subside spontaneously or as the result of therapy anywhere in its course up the spine.

General systemic symptoms such as weight loss, weakness, low grade fever, anorexia and insomnia may occur but vary greatly in the individual case.

Laboratory Studies

With the exception of the x-ray findings, the erythrocyte sedimentation rate is the most helpful and consistent laboratory aid in the diagnosis of rheumatoid spondylitis. It is elevated in approximately 80 per cent of cases. In this group, 23 of the 30 patients (77 per cent) manifested elevated sedimentation rates. In the entire series it varied from a 3 millimeter to 105 millimeter fall in one hour (top normal 20 millimeters, Westergren method), with an average drop of 48 millimeters. A moderate hypochromic anemia may be present.

Roentgenographic Features

The changes on x-ray are the most valuable findings in establishing the diagnosis of rheumatoid spondylitis. It is important to bear in mind, however, that definite symptoms, positive physical findings and elevation of the sedimentation rate may be present before structural changes can be noted by x-ray.

Almost invariably the first changes are noted in the sacro-iliac joints and are bilateral. On the basis of the roentgenographic findings, patients may be divided into three groups:

Group I — early — 6 cases. X-ray changes are limited to the sacro-iliac joints. There is loss of definition of the joint space, described as hazy or "ground-glass" in appearance. Although there are no changes in the vertebral bodies, a loss in the normal lumbar curve may be noted.

Group II—moderately advanced—14 cases. The x-ray findings in this group consist of more marked changes in the sacro-iliac joints associated with definite apophyseal changes especially in the lumbar spine. Calcification of the spinal ligaments may be present. The sacro-iliac joint cannot be defined and may be completely obliterated. Erosion with roughening of the facets occurs in the apophyseal joints and the joint spaces become narrowed.

Group III — far advanced — 10 cases. This phase has long been stigmatized as the characteristic picture of chronic rheumatoid spondylitis. There is complete ankylosis of the sacro-iliac joints with moderate to advanced calcification of the paravertebral ligaments and establishment of the true "poker spine".

Diagnosis

The diagnosis in the moderately advanced or advanced cases with typical findings on physical examination and x-rays offers no great problem.

Unless a high index of suspicion is maintained, early cases may be easily missed. In this group of patients there was an average time lag of 3.4 years between the onset of symptoms and the establishment of the diagnosis. In two cases an eight-year interval intervened.

Treatment

In general, the therapy of rheumatoid spondylitis may be divided into four categories.

1. *General.* This includes measures designed to improve the patient's general condition. Since weight loss and anemia are frequently present, adequate measures to combat them should be taken in the form of a high calorie diet, vitamin accessories and hematinic agents, such as iron or transfusions of blood.

Acetylsalicylic acid or its related compounds are of value in the relief of pain and in enabling the patient to obtain adequate rest.

Removal of foci of infection, fever and foreign protein therapy, vaccines and gold have little, if any, place in the therapy of rheumatoid spondylitis.

The patient should be advised as to the nature of his condition and attempts made to allay his apprehensions and fears.

2. *Orthopedic.* Therapeutic measures in this category are aimed primarily at the prevention and correction of postural deformities. Much can be accomplished along these lines by the use of relatively simple postural exercises if they are carried out regularly and diligently by the patient. Deep breathing exercises and exercises designed to stretch the hamstrings and calf muscles should be done several times daily. Frequently they are facilitated by the use of heat in the form of infrared light or a hot tub bath prior to the exercises. The importance of proper posture should be stressed.

The patient with rheumatoid spondylitis should use a firm bed without a pillow under the head. A soft pillow under the lumbar region may help to maintain the normal lumbar curve.

Spinal braces should be reserved for those cases with more advanced deformities or where the simpler measures outlined above have not been successful in preventing the development of deformities. If a support is necessary, the Taylor back brace with metal under-arm crutches has proved most satisfactory. At times a simple sacro-iliac belt is sufficient to control persistent low back pain. In some cases of severe deformities, plaster half-shells may aid in relieving muscle spasm and pain, especially at night. Most of the cases reported here were seen in consultation by an orthopedic surgeon for help in diagnosis and outlining therapy, especially in the application of splints, casts, braces and similar appliances.*

D-tubocurarine in oil and wax has been recommended for relief of muscle spasm and pain.[4] It was used here in one patient without benefit. In several cases of severe pain, intravenous procaine (4 mgm. per kilo. of body weight) has proved helful for temporary relief.

3. *Roentgen Therapy.* Consistently favorable reports regarding the results of roentgen therapy have appeared in the literature since 1930. A large series of cases has been accumulated where its value appears undisputed. Appreciable improvement has been noted in from 50 to 90 per cent of cases. A bibliography on this type of therapy may be found in an article by Query.[5]

The actual technique varies but usually consists of a total of 600 r, occasionally 800 r, given in 200 r doses every two days to each area involved.

It cannot be determined as yet whether roentgen therapy actually alters the disease process or whether it simply produces an analgesic effect. The latter hypothesis seems unlikely as the improvement may last for years.

In the event that no improvement takes place, a second course of treatments may be given after a rest period of four weeks and a third course after another rest period of twelve weeks. It is important to remember that the response to x-ray may be delayed and maximum benefits may not occur for several weeks.

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*The author is grateful to Doctors J. Hunter Smith and Theodore B. Strange for their orthopedic consultations.

Toxic reactions are fairly common but usually mild. Nausea, vomiting, anorexia, and general malaise may be troublesome but are transient. Leukopenia may develop. Young women should be treated with less individual and total dosage because of the possibility of trauma to the ovaries.

Table 1 shows the results of roentgen therapy in the 21 patients who received this treatment. Of the 9 patients not treated with x-ray, 7 were considered to have advanced "burned-out" disease; one patient refused therapy; and one is still hospitalized.

Eleven of the 21 cases treated with x-ray showed moderate to marked benefit as manifested by improvement in subjective complaints, objective findings on physical examination and by decrease in the sedimentation rate. Weight gain and improvement in general well-being were consistently noted. In some cases, regarded as showing moderate improvement, there was persistence of some stiffness and, to a lesser degree, pain, apparently due to irreversible changes. When improvement was considered slight or equivocal, therapy was classed as a failure.

These 11 cases have been followed by letter or personally for periods up to three years.

Patient	Age	Duration (Years)	Sedimentation Rate (mm./hr.)	Degree	Therapy	Remarks
O-4721	52	25	18	Advanced	X-ray	No improvement; "burned-out" case
O-4748	26	2	71	Early	X-ray	Marked relief; 3-year follow-up
O-4884	27	3	10	Moderate	X-ray	Moderate improvement; 3 years
O-5165	34	5	11	Early	X-ray	No improvement; sedimentation rate normal
O-5247	26	6	60	Advanced	X-ray	Marked improvement; 2½ years
O-5680	32	8	89	Moderate	X-ray	Marked improvement; 2 years
N-644	26	7	32	Moderate	X-ray	No improvement
N-777	41	7	22	Advanced	X-ray	No improvement; borderline sedimentation rate
N-2888	31	1		Moderate	X-ray	No improvement
N-2896	29	6	30	Early	X-ray	Marked relief; 6-month follow-up
N-3104	35	6	38	Moderate	X-ray	Marked relief; 6-month follow-up
N-3708	24	1	15	Early	X-ray	No improvement; normal sedimentation rate
N-44	23	3	105	Advanced	X-ray Cortisone	No improvement with X-ray Well maintained on cortisone
N-1590	33	9	51	Moderate	X-ray Cortisone	Well controlled on maintenance cortisone; this was discontinued without relapse after X-ray therapy.
N-1702	32	8	15	Moderate	X-ray Cortisone	Moderate but only temporary relief from X-ray; well maintained on 75 mgm. oral cortisone daily.
N-1786	34	8	60	Moderate	X-ray Cortisone	Moderate but only temporary relief from X-ray; well maintained on 50 to 75 mgm. oral cortisone daily.
N-1850	51	20	14	Advanced	X-ray Cortisone	No relief from X-ray; "burned-out" case; moderate relief from cortisone.
N-2441	32	8	105	Moderate	X-ray Cortisone	No improvement with X-ray or cortisone
N-2777	30	10	40	Moderate	X-ray Cortisone	Marked improvement with cortisone; subsequent equal effectiveness from X-ray; cortisone discontinued.
N-3151	27	8	60	Advanced	X-ray Cortisone ACTH	No response to X-ray or cortisone; moderate improvement while on ACTH.
N-2325	25	1	50	Moderate	ACTH X-ray	Marked relief from ACTH; moderate improvement with subsequent X-ray.
O-3380	25	3	98	Advanced	Cortisone	Moderate improvement with cortisone; no X-ray therapy given.
N-1568	37	8	45	Moderate	ACTH Cortisone	Moderate improvement with both; Keratoderma blennorrhagicum; no X-ray

Table 1. Results of Roentgen and Steroid Therapy in Rheumatoid Spondylitis.

Nine have maintained their improvement after roentgen therapy. Two patients who relapsed after one and one and a half years subsequently responded well to cortisone.

Of the ten patients in whom x-ray treatment was considered a failure, two (O-4721, N-1850) were advanced, probably "burned-out", cases of 20 and 25 years' duration and with normal sedimentation rates. One of these (N-1850) was maintained subsequently on cortisone with moderate improvement. No explanation is available for the failure of response in the other 8 cases, although only one in this group received more than one course of therapy.

4. *Treatment with cortisone and corticotrophin (ACTH)*: In the ever-increasing volume of literature concerning the use of these steroid hormones, rheumatoid spondylitis has been included among the diseases which respond favorably to their use. The mechanism of their action is unknown. The improvement produced is temporary, lasting only during the period of administration or for a short time thereafter.

Cortisone was administered in doses of 100 mgm. every 8 hours for 3 doses, then every 12 hours for 2 doses and 100 mgm. daily thereafter. The daily dosage was gradually decreased in 25 mgm. amounts until the lowest satisfactory maintenance dose was established. Oral cortisone was used for maintenance after discharge from the hospital and found to be equally effective in dosage equivalent to the parenteral preparation.

ACTH was administered in 25 mgm. doses every 6 hours. It was then tapered off by 5 mgm. amounts every 4 to 5 days until discontinued.

Body weight and blood pressure were checked daily and urinalyses, complete blood counts, blood urea nitrogen, serum proteins and electrocardiograms were obtained twice weekly. No untoward effects were noted in this group of patients.

Table I shows the results of therapy with these preparations. Eleven of the 30 patients were so treated, 8 with cortisone alone, one with ACTH alone and 2 with both. Two patients (N-2441, N-3151) showed no improvement with cortisone. Neither of these received more than 100 mgm. daily and it is possible that a favorable response might have been obtained with larger doses. Eosinophile counts were not done routinely. It is interesting to note that neither of these patients had had a satisfactory response to x-ray therapy given prior to cortisone.

Six patients have obtained moderate to marked improvement on maintenance cortisone in doses of 50-100 mgm. daily. Four of these (N-44, N-1702, N-1786, N-1850) have been controlled in comfort for periods of 6 to 12 months. Two of these (N-1702, N-1786) had previously relapsed from x-ray treatment.

In patients N-1590 and N-2777, cortisone was discontinued without relapse of symptoms after a course of roentgen therapy.

The one case (N-2325) treated with ACTH and subsequently with x-ray obtained greater relief from the former.

Included in this series is a patient with keratoderma blennorrhagicum (N-1568) who had moderately advanced rheumatoid spondylitis of 8 years' duration. During ACTH and cortisone therapy of the keratoderma, the spondylitis showed temporary improvement.

It is to be stressed that the final word in the use of these steroids has not been written. Their use in rheumatoid spondylitis should be restricted to those cases where roentgen therapy has failed, and where there is progressively severe deformity and discomfort. The patient should be made aware of the limitations of the therapy as to expense, temporary nature of their action and their potential hazards.

Summary

Thirty cases of rheumatoid spondylitis observed in a three-year period have been presented with a discussion of the clinical and therapeutic aspects of this disease.

The importance of early diagnosis and x-ray therapy is stressed. Eleven of 21 cases so treated showed moderate to marked improvement.

ACTH and cortisone produced temporary improvement in 9 of 11 cases so treated. Oral cortisone therapy has been effective in maintaining improvement in 4 patients for periods up to 12 months. The limitations of treatment with the steroid hormones are emphasized.

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CLINICAL ELECTROENCEPHALOGRAPHY

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In 1929 the work of Hans Berger of Jena first came to scientific attention demonstrating the then disputed but now universally accepted fact that the human brain is possessed of a rhythmical electrical beat and that its various anatomical sub-divisions give a fairly distinctive bilaterally symmetrical pattern when recorded on the electroencephalogram. The initial stumbling block was the fact that electronic equipment was not sufficiently advanced then to fully utilize this knowledge, since an amplification of about one hundred million times is needed to provide suitable tracings. With the furthering of equipment development to its present state of refinement, it is now possible for us to take an electrical potential of about 1/100th that of the heart and by suitable amplification obtain parallel tracings on a continuous paper strip revealing the electrical activity of the brain cells underlying the area where the electrode is attached to the scalp, and by means of interpreting these tracings obtain much information regarding the condition of the cerebral tissue. All of this is somewhat analagous to electrocardiography, in which by means of suitably spaced electrodes, the electrical activity of the heart is outlined on a paper strip in the form of continuous waves.

Our technique at the Veterans Hospital in Wilmington is to attach with collodion small metallic electrodes to the scalp. In the usual recording, these overlay the frontal, parietal, occipital, and temporal areas. The machine is then started and a continuous tracing is taken on recording paper until we feel we have enough information to enable a diagnosis to be formulated. Naturally, trained personnel and equipment are required.

With EEGs performed by various workers in the field on a large group of individuals and their subsequent statistical analyses, we have developed certain criteria for classification of these records as normal and abnormal, with a further breakdown of the abnormals to clinically correlated patterns. It is in this area that the EEG becomes useful, allowing us to diagnose problems of brain tissue function, comparable again to the relationship between the electrocardiogram and cardiac pathology.

Since obviously the brain tissue is always in a state of physiological alteration, the recordings demonstrate continuous changes, varying in a normal person according to the degree of wakefulness and attention paid to external surroundings, changes of blood sugar, fatigue, oxygen tension, etc. If these electrophysiological conditions are abnormal, they are shown in the tracing, since in essence it is only a reproduction of the cerebral electrical currents. Thus an abnormal tracing in an epileptic condition does not necessarily indicate structural disease within the brain but does show that the electro-physiological state is abnormal.

Some of the conditions in which electroencephalograms prove clinically valuable are brain tumors, developmental defects, and vascular lesions as cerebral embolism, hemorrhage, or thrombosis. In traumatic conditions to which all of us are becoming increasingly exposed in a professional sense, serial tracings are of inestimable value in allowing us to obtain an idea of the extent of damage, prognosis, and the possibilities of seizure development eventually occurring. Peculiarly enough, the usual post-concussion syndromes which we encounter, with a multiplicity of complaints following the initial trauma do not usually reveal any tracing abnormalities. Thus reinforcing in a sense, a good deal of present feeling that the headaches, etc., which are complained of post-traumatically are based on psychogenic causes. Epilepsy and the progress made in the study of this convulsive disease owe a great deal to electroencephalography. The various epileptic classifications usually have their own characteristically abnormal electroencephalogram and often allow us to differentiate this condition from others, such as tumor, trauma, hysteria, etc. Diffuse diseases of the cerebral tissue, such as toxic states, both endogenous and exogenous affect the functioning cell and consequently furnish us with tracings varying from those which are considered normal.

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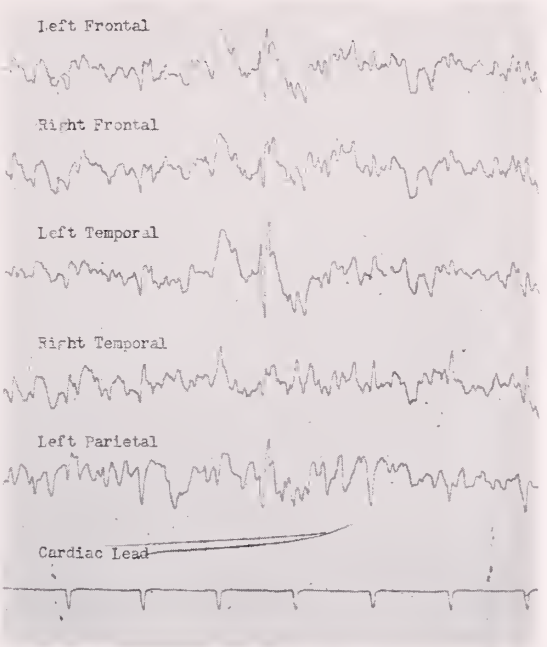
*Chief, Neuro-psychiatric Service, V. A. Hospital

The following case history will clearly show the value of electroencephalographic studies on conditions, whose diagnosis would otherwise remain obscure.

Case 1

A twenty-nine year old male was admitted July, 1951, with a complaint of "attacks of unconsciousness for the past year." The patient stated he had three severe attacks during his work at a mill in the last year. These episodes were preceded by "a brief feeling of light-headedness." He has no memory for the attack and does not know from reports of observers whether he had twitching, convulsions, or foaming at the mouth. He cut his tongue on one occasion and struck his head on another. He had been hospitalized last year, skull x-rays were taken but nothing was found. He stated "People tell me I try to fight during these spells but I have no memory of it." There was no loss of bowel or bladder control during these episodes. The family history is negative for epilepsy. Physical examination was essentially negative with no significant neurological findings present. Laboratory examinations, including spinal fluid studies were all within normal limits. In view of the patient's repeated seizures with onset at the age of 28 and no history of head trauma, it was felt that further examination was warranted, and an electroencephalogram was performed. This was consistent with a diagnosis of epilepsy, grand-mal type. With the positive electroencephalograph findings obtained and in view of the other factors it was felt a pneumoencephalogram was warranted. This did not reveal any pathology. A discharge diagnosis of epilepsy, grand-mal, idiopathic type, was made and the patient put on suppressive medication. A follow-up electroencephalogram done after four months of medication, during which time the patient was symptom free, have not shown so abnormal a pattern.



EEG Interpretation

This EEG shows frequent isolated spikes, mainly in the left temporal area with some spread, both anteriorly and posteriorly. A cardiac lead was used to rule out the possibility of this spiking activity being considered as an artefact. This EEG is consistent with a diagnosis of Grand-mal epilepsy.

The electroencephalogram has not been of much help in the pure psychiatric conditions, such as the psychoses and psychoneuroses, based as they usually are on psychogenic factors. The electroencephalogram is useful in a negative way, however, in that it does help us to rule out organic causes for the above diseases.

As we progress, the present wide value of the EEG will undoubtedly increase. As we are at this moment, it is already an indispensable instrument in our complete and painstaking patient care. Indeed, a patient with any form of cerebral complaint cannot be said to have received adequate study if the diagnostic value of the EEG is not used when indicated in conjunction with whatever else we do.

D. A. M.-A. A. G. P. SYMPOSIUM

The Delaware Academy of Medicine is presenting a Symposium on Obstetrics and Office Gynecology to be held in the Academy of Medicine Building, Wilmington, in April, May, and early June, 1952. The speakers will be Wilmington obstetricians and gynecologists, and at each session time will be allowed for open discussion and questions to the speakers and to a panel. All meetings will start promptly at 8:00 P. M.

This symposium is co-sponsored by the Delaware Chapter of American Academy of General Practice, and is open to all interested physicians, residents and interns. Because of the interest already displayed the program will be presented in its entirety on both Wednesday and Thursday nights as indicated.

Thursday, April 10 and Wednesday, April 16, 1952:

- A. Prenatal care, including Rh factor, Dr. Willard Preston;
- B. Fundamentals of clinical pelvimetry, Dr. Andrew Gehret;
- C. Difficulties frequently encountered during labor, Dr. O. N. Stern.

Wednesday, April 23 and Thursday, April 24:

- A. Medical complications of pregnancy, Dr. Thomas Pennock;
- B. Newer concepts of toxemia of early pregnancy, Dr. Isadore Slovin;
- C. Pre-eclampsia and eclampsia, Dr. George Garrison.

Wednesday, April 30 and Thursday, May 8:

- A. Bleeding in early pregnancy, Dr. Junius Giles;
- B. Bleeding in late pregnancy, Dr. Richard Hayden;
- C. Analgesia, anesthesia, and fetal resuscitation, Drs. Richard Allen and Stanley Hassler.

Wednesday, May 7 and Thursday, May 15

- A. Pelvic examination and evaluation, Dr. Allen Seeger;
- B. Vulvitis, vaginitis and pruritus ani, Dr. Phyllis Gallaher;
- C. Diseases of the cervig uteri, Dr. Sylvester Rennie.

Wednesday, May 21 and Thursday, May 22:

- A. Dysmenorrhoea, Dr. Morton Keyser;
- B. Uterine malpositions, including prolapse, Dr. Stevens-Young;
- C. The climacteric, Dr. William Gallaher.

Wednesday, June 4 and Thursday, June 5:

Odiopathic uterine bleeding, Dr. Rakoff (Jefferson Medical College)

There will be a registration fee of $3.00 for those physicians who are not members of the Delaware Academy of Medicine. For further information address the Delaware Academy of Medicine, Lovering and Union Sts., Wilmington, Delaware.

Teachers, Like Doctors, Find FSA Troublesome

The nation's educators, like the doctors, are finding Mr. Ewing's Federal Security Agency a pain in the neck.

An Indianapolis teacher, Frank Hamilton, who spent a year in Britain as an exchange teacher under the Fulbright Act, has been "warned" because he came home to tell Americans that socialism in England is merely "doctored up communism." Hamilton expressed his views in lectures and newspaper interviews.

"Ewing," said the Chicago Tribune, "had one of his fat boys, J. Harold Goldthorpe, of the FSA office of education, write Hamilton threatening that a continuation of the teacher's expressions would result in cutting off opportunities for Indianapolis teachers to receive Fulbright junkets to Europe."

"When this (FSA) outfit," said the editorial, "arrogates to itself the authority to circumscribe the exercise of free speech, it may well be wondered what liberty of expression it would permit teachers to retain if it ever succeeded in its ambition of obtaining control over the public school system of the United States."

AMA Secretary's Letter, Feb. 6, 1952

A "new USO" was born January 31, 1951. Like its World War II predecessor, it is called UNITED SERVICE ORGANIZATIONS, INC. It gives service, travel aid, and counselling to servicemen and their families, will operate programs for defense workers, and will provide entertainment for servicemen though USO-Camp Shows.

+ Editorials +

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Principles—Not Principals

Now that the City Solicitor of Wilmington has ruled that the promotion of two employees of the Wilmington Health Department by the Wilmington Board of Health rather than on the nomination of the Health Commissioner is legal and valid, what next? At its meeting a couple of nights ago the County Medical Society adopted unanimously this resolution:

"In the event that the city solicitor either continues to delay making a ruling, or rules that the Board of Health was within its rights in appointing a professional employe of the Board to a new position over the objection and protest of the health commissioner, I move that the officers of the New Castle County Medical Society be directed to instruct our attorney to take such measures as are necessary to obtain a ruling from the city solicitor or a judicial review of the ruling of the city solicitor."

Apparently the next move is up to the Medical Society, and will of course depend upon the advice given it by its attorney. He may agree with the lengthy and seemingly well-documented decision of the City Solicitor, in which case the idea of a court determination of the matter may be abandoned. If, on the other hand, he disagrees with the City Solicitor, a court review of the matter may well be in order.

Regrettable as are the two professional resignations from the Board, the Medical Society is not concerned primarily with their public health careers; it is concerned not with personalities, with principals, but with ideas of right and wrong, with principles.

Pending the future course of action, it should be stated that all that the medical men want is the top assurance that things are being done according to law and not according to whim, no matter whose; that the immediate control of public health matters rests with medical men and not with laymen; and that the putrid paws of politics, if they be messed up in our public health administration, be pulled out and kept out! Public health and politics don't mix!

A Good Doctor Is a Good Citizen

The physician who consistently fails to attend hospital staff meetings, or who takes no active part in the affairs of his Medical Society, is hardly in a good position to criticize either the hospital or the Medical Society. By failing to make his voice heard, he must share the blame for any faults, failures or deficiencies.

Likewise, the physician who fails to *register* and *vote* is not in a good position to complain about corruption, taxes or governmental policies which he finds obnoxious. By failing to fulfill one of the vital duties of citizenship, he must share the blame for any black spots in the affairs of the community, the state or the nation.

The right to *register* and *vote*, which is both a privilege and a duty in a nation of free men, was never more important than it is right now. Fundamental issues which transcend the usual party politics, and which will affect the future of every American, call for a clear-cut decision by the entire voting population. Be sure that you play your rightful part in that historic American decision.

To be a good doctor—first be a good citizen. *Register* and then *Vote*. And of equal importance, see that your family does likewise.

Most rapid growth of the Community Chest idea has been in the last decade with a 100 per cent increase in both the number of cities conducting Red Feather campaigns and the total amount of money raised.

Milwaukee, Wis., and Pittsburgh, Pa., established Councils of Social Agencies in 1909 for united planning of community health and welfare services. There are now over 400 Councils in the United States.

The first united fund-raising campaign to be held in the United States was conducted in 1887 by the Associated Charities in Denver, Colorado, the forerunner of the Denver Community Chest. It included 23 health and welfare services.

In 1913, Cleveland, Ohio, established the first united fund-raising campaign to include both budgeting and planning for health and welfare services.

"The scarce commodities in a defense effort are the time, the effort, the blood, the money, the talents of people", says Mrs. C. H. L. Pennock, chairman, National Advisory Committee on Citizen Participation, Community Chests and Councils of America, Incorporated, and the National Social Welfare Assembly.

The Pennsylvania Hospital in Philadelphia, established in 1752, was the first hospital in the United States. The cornerstone was laid by Benjamin Franklin. It is now a Red Feather service of the Community Chest of Philadelphia.

MISCELLANEOUS

P. R. Program, 1952

A meeting of the Medical Service and Public Relations Committee of the Medical Society of Delaware was held on February 24, 1952.

The following plan was adopted:

(1) To urge all members and their families to register and vote, and they in turn try to interest their friends and patients to do the same, regardless of political affiliation.

(2) Urge leaders of both major parties to elect delegates to their respective conventions who are opposed to socialism and socialized medicine. This should be done on the local level.

(3) Urge all members to join civic, social, and church organizations, and to participate actively in their projects.

(4) Urge members to join the Delaware Chamber of Commerce or at least their local Chambers of Commerce. To show appreciation for what the National Chamber of Commerce is doing for us.

(5) Urge each County Society to set up a plan for taking care of emergency work, holidays and Sundays. The doctor to make sure if away or not available for any reason, that the patients are adequately covered.

(6) Urge each County Society to set up a Grievance Committee to handle all cases in their respective counties. If they are unable to properly dispose of the complaints, refer to the State Grievance Board.

YOUR VOTE

CAN HELP MAKE HISTORY

BUT NOT UNLESS

YOU'VE REGISTERED!

DWINDLING RESOURCES

In the swift development of current world events the citizen-taxpayer is aware of vague menaces in the future amid the more active assaults upon his present way of life. Perhaps professional men and women feel this uneasiness to a greater extent than others, and more particularly doctors of medicine, since many of these events of the last fifty years have now begun to affect their professional associations, their practices, and their status in the community. The realization is growing apace that the concept of the "American way of life" is undergoing change.

> Beneath all its specific, detailed components is the single comprehensive idea of personal liberty, of individual opportunity, of room for the expansion of each person's activities and thoughts and the winning of his rewards to the limit of his capacity. Included also by many persons who envisage this American way of life are the ideas of decency, of friendliness, of neighborliness, and even of certain spiritual qualities flourishing in a land of economic abundance as well as of scenic acceptability.[1]

The student of history is aware of the extraordinary growth of European populations from 1800 to 1914 and of the more recent expansion of the Asiatic peoples. Mere population pressure has engendered severe economic and political problems affecting the manner and standards of living of many millions of persons. Such rapid increase in populations has meant that "heap after heap of human beings have been dumped on the historic scene at such an accelerated rate that it has been difficult to saturate them with traditional culture . . . In the schools . . . it has been impossible to do more than instruct the masses in the technic of modern life; it has been found impossible to educate them . . ."[2]

But an impartial observer cannot fail to have noted a growing resurgence of nationalism that has risen before, during, and since the close of World War II and which cannot fail to have world-wide significance. Events in Europe and Asia, in the middle East, and elsewhere are exerting influences upon our national economy and our way of life that already have committed our resources and productive capacity to a heavy strain and our citizen-taxpayers to previously unheard of "peacetime" taxation. The rise of socialism in many parts of the world seems to be the fumbling attempt of peoples to adjust their economies to dwindling resources, both material and political.

No doctor can view the current national budget calling for expenditures of 85 billions, of which some 90 per cent goes for war, past, present, and future, without reflecting upon the fact that this expenditure, besides creating inflation, will make Government the biggest employer in the nation. There are now 2,500,000 government employes, and a year from now this total is expected to rise to nearly 2,650,000. Ordinary government expenditures will take 10 cents of every tax dollar, and of that dollar 3 cents goes for social welfare projects. Veterans medical care, pensions, and education will take about 5 cents.

In the foreseeable future there does not seem to be much hope of lightening this burden. Inescapably this nation is committed to a participation in world affairs that will increase rather than diminish and will require more and more taxes. Expansion of the Veterans Administration and of social security coverage will put governmental influence more and more into the conduct of private enterprise. Resources and resourcefulness have created a great nation under a "Constitution designed originally to protect the citizen from his government—for it is in the very nature of government that it must seek to increase its own employment."[1]

We have seen the waning of Western Europe, the enchainment of the medical profession in England and Germany to the chariot of socialistic government, with loss of cherished liberties. Will population pressure here, together with increasing tax burdens and participation in world affairs, deplete us to the point of no return? If private enterprise has been wasteful, among its other faults of selfish acquisitiveness and some corruption, can it be said, on the other hand, that governmental operations have been conservative?

Perhaps the best answer is contained in the Hoover recommendations for reorganization of governmental departments for greater operating efficiency, only a few of which have so far been adopted. If government is to extend its control more and more over the lives of the people, let it at least be efficient government.

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[1] Editorial: New England J. Med. 246: 96 (Jan. 17) 1952.

[2] Revolt of the Masses, New York City, W. W. Norton Co., 1932.

—Editorial, *N. Y. St. J. M., March* 15, 1952.

Course In Allergy

On April 4-6, 1952, at Pittsburgh, Pennsylvania, the American College of Allergists will offer an instruction course in allergy. To insure complete coverage, the College has called in some 60 well known authorities in the field to give addresses, clinical talks and demonstrations. The program has been designed for physicians in other fields of practice, especially those in general practice, that they may learn to recognize and manage the allergic component in the complaints of their patients. For further information and a copy of the program, write the office of the American College of Allergists, LaSalle Medical Building, Minneapolis 2, Minnesota.

Pulmonary tuberculosis could be wiped out if compulsory cooperation in annual mass chest surveys could be secured, as has been achieved in the Scandinavian countries. Similar dividends are not to be expected from survey procedures in gastrointestinal roentgenography, but pilot experiments are underway, in several institutions, that should clarify the magnitude of the problem and the frequency of unsuspected but curable lesions disclosed by routine methods. Mass chest surveys may be of considerable value in the discovery of unrecognized cases of heart disease. Merrill C. Sosman, M.D., *The New England J. Med.*, April 12, 1951.

BOOK REVIEWS

The Serpent-Wreathed Staff. A novel by Alice Tisdale Hobart.

If Mrs. Alice Tisdale Hobart had managed to devise a suitable ending for her 402-page novel, "The Serpent-Wreathed Staff," about sixty pages sooner than she did, a tolerant critic would be able to say that she had written a faulty but highly interesting story of human conflicts and loyalties.

Unfortunately, however, the latter part of the book degenerates swiftly and recklessly into an amazing propaganda piece for National Compulsory Health Insurance. The last forty or fifty pages sound as if Mrs. Hobart knocked them out hastily at a desk piled high with pamphlets, speeches and news releases handed out by Federal Security Administrator Oscar Ewing and the Committee for the Nation's Health.

This uncraftsmanlike abuse of artistic license, added to some of the implications built up in earlier pages, creates the impression that the entire novel was designed as a subtle presentation of the case for socialized medicine. As a result, Mrs. Hobart undermines much of the validity that does exist in some of the earlier parts of this book about doctors, modern medicine and a changing world.

Despite her failure to give a true interpretation of the social and economic developments in medicine today, the author shows her usual skill in weaving a plot and telling a story. She is at her best when describing the personal problems and struggles, the emotional triumphs and defeats, of her principal characters. On this fictional level the book has undeniable merit and strength, for the reader finds himself sharing the fears, anxieties and grief of the people in the novel.

Central figures in the story are two brothers, Dr. Alan Towne and Dr. Sam Towne, grandsons of old Dr. Samuel Towne, who had achieved medical eminence only after many years of struggle and criticism because of his unorthodox ideas. Sam, the older of the two brothers, is portrayed as successful, wealthy, conservative. Alan is drawn as the idealistic, progressive pioneer, striking out in new and dangerous directions and carrying on in the tradition of his grandfather.

Main action of the novel begins shortly after the end of World War II when Alan leaves a comfortable, assured partnership with Sam to start a group practice. From then on the troubles and tragedies mount in rapid sequence and growing complexity. In the short space of three or four years Alan becomes an

"Anthony Adverse" in modern American medicine.

When the facile, all-inclusive plot is used as a mechanism for discussion of the social, economic and political aspects of modern medicine, the book suffers not only from the standpoint of literary merit but also from the standpoint of accurate reporting. On this level the book is dangerously superficial. Complex problems and issues affecting the practice of medicine are introduced in rapid-fire, hop-skip-and-jump fashion — over-simplified and overdramatized, but mixed with just enough truth and half-truth to give credence to a distorted picture.

As all of these elements are woven deftly into the novel, their manner of presentation builds the subtle implication — even in the earlier parts of the book — that most doctors are primarily and selfishly interested in making money, bolstering their own reputations and preserving the status quo in medicine.

Mrs. Hobart also gives the impression that group practice, health insurance plans, preventive medicine and similar ideas are brand new developments — practically untried and unheard of in a present-day American city. Actually, most of the concepts and projects which occur to Alan Towne, in sudden flashes of inspiration, are part of the knowledge of any alert medical student. Actually, the industrialists and businessmen on Alan's hospital board are utterly untypical when they talk and act is if they had never heard of such a thing as group health insurance for their employes.

Before Mrs. Hobart writes another novel on this subject, someone should familiarize her with the major facts and realities in the field of modern medical economics.

Someone, for example, should tell her about the many famous clinics and countless other forms of group practice which are in successful operation throughout the country, some of them since around the turn of the century.

Someone should tell her about the hundreds of fast-growing, constantly-improving voluntary health insurance plans, which by the end of this year will be protecting an estimated 90 million Americans against the major costs of illness and accidents.

Someone should tell her about the nation-wide progress of state and county medical societies in setting up doctor placement programs, grievance committees, emergency call systems, cost adjustment committees, local health units, and a variety of other activities designed to make good medical care available to all the people.

Incidentally, someone also should inform Mrs. Hobart that the "National Medical Association", a name which she uses as a pseudonym for the American Medical Association, is the actual and proper name of the national organization of Negro physicians.

But Mrs. Hobart, unmindful of such trivia as facts and accuracy, writes furiously on, and after only two or three years of struggle in group practice and as head of a group hospital, Dr. Alan Towne is an advocate of government health insurance. Apparently neither the author nor the good young doctor sees the glaring contradiction between government medicine and Alan's own philosophy of careful, personalized treatment of the whole patient, in mind and spirit as well as in body.

Everyone interested in American medicine, and in the effort to find intelligent solutions to our medical care problems, should read "The Serpent-Wreathed Staff" if for no other reason than to help repair the damage which the book does.

Read simply as a novel, it is a moving, absorbing story.

Read as a source of information affecting public opinion on medical-economic issues, it unfortunately is an example of careless, superficial writing, with a built-in conclusion contrary to the convictions of the great majority of Americans today.

Attorney's Textbook of Medicine. By Roscoe W. Gray, M. D., Surgical Director, Aetna Casualty and Surety Company. Third Edition, Vol. 3. Pp. 938, with 35 illustrations in full color, in loose-leaf binder. Price $18.50; the set: pp. 3030, $50.00. Albany, N. Y.: Matthew Baeder and Company, 1951.

The present volume constitutes Volume 3 of the third edition of this outstanding work. Volumes 1 and 2 were reviewed in this Journal in August 1950. The current volume includes new material on aerotitis media, a full discussion of the Rh factor in blood, silver poisoning, radioactive isotopes, impotence and menopause. Also it contains an Atlas of human anatomy in full color, which is beautifully done and an important part of the work.

The book contains an index of 526 pages, covering the entire three volumes, containing over 20,000 entries. It is written primarily from the insurance compensation and damage suit viewpoints for attorneys, but it is equally useful to the physician who is called upon to testify in medico-legal cases. It is interesting to know that the work has already been purchased by a very substantial number of physicians.

Dr. Gray, the author, has been in this business for 25 years, working with 700 affiliated attorneys, and the three volumes show the tremendous extent and character of his experience. Medical terms are deleted and the text is in English that any layman can understand. Questions and points to be covered in investigation claims are given at the end of each section, and constitute an invaluable check list for the attorney.

We know of no other book exactly like it, and of only a couple of others that resemble it. We have seen nothing remotely as complete. We recommend it as the finest of its type in the English language.

Electroencephalography in Clinical Practice. By Robert S. Schwab, M. D., Director of the Brain Wave Laboratory, Massachusetts General Hospital, and Associate in Neurology, Harvard Medical School. Pp. 195, with 106 figures. Cloth; Price, $6.50. Philadelphia: W. B. Saunders Company, 1951.

This book is an interesting and valuable survey of the development, uses and interpretation of the electroencephalogram. Although it is primarily intended for the specialist in psychiatry, neurology and neurosurgery, it will be a useful source of information for the internist and general practitioner who so frequently have occasion to use this diagnostic tool.

The early chapters trace the development of electroencephalography from its origin with Hans Berger in 1929, to its present status as a separate and fascinating field. The understanding of later chapters is facilitated by the brief but adequate treatment of the underlying principles of electrophysiology. The following sections discuss and illustrate normal and abnormal patterns. The techniques of obtaining and recording the tracings are then outlined. The contributions of the electroencephalogram in specific neurologic, neurosurgical and psychiatric problems receives further amplification in the final sections of the book. The glossary will prove helpful in interpreting terminology used in description of wave forms, frequencies and methods of obtaining recordings.

The book is of particular value in the clarity of the presentation and its avoidance of highly technical discussions. It should be a valuable addition to the library of anyone who, in the course of his practice, has occasion to deal with diseases of the nervous system.

The Merck Index of Chemicals and Drugs. Compiled by the publishers. 6th edition. Pp. 1167. Fabricoid. Price, $7.50; $8.00 with thumb-index. Rahway, N. J.: Merck & Company, 1952.

The completely new sixth edition of the Index covers more than 8,000 descriptions of individual substances, more than 2,000 structural formulas, and about 20,000 names of chemicals and drugs alphabetically arranged and cross-indexed.

New features include a table of standard buffers for calibrating pH measurements; a table of radioactive isotopes giving their half lives and type of radiation, and a table of current medical uses for radioactive elements and compounds. Also, more than 300 organic "Name" reactions with original and review references, together with a description and structural representation of each reaction. There is an up-to-date periodic table, a table of international atomic weights, and close to 150 pages of appendices on such subjects as coal-tar colors, thermometric equivalents, antifreeze mixtures, refractive index of liquids, saturated solutions, percentage solution tables for apothecaries, and atomic weights and their multiples and logs.

The previous edition of the Merck Index was published in 1940; the first one in 1889. This latest edition of an old and famous work will be of the greatest value to chemists, pharmacists, physicians, members of allied professions, especially those engaged in research.

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TREATMENT OF PERIPHERAL ARTERIAL DISEASES*

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Philadelphia, Pa.

The subject will be limited to the treatment of those peripheral arterial diseases in which ischemia plays the most important part. It is the symptoms of ichemia that bring the patient to the physician, and the ischemia itself that endangers the limb of the patient: ischemia causing blanching, coldness, cyanosis, paresthesias, pain, intermittent claudication, atrophic changes of the skin and nails, rubor on dependence, indolent ulceration and when very severe, anesthesia, vesiculation and gangrene.

The diseases in which bothersome ischemic symptoms are most commonly present are divided into an organic group; i.e. peripheral arteriosclerosis with occlusion, thrombo-angiitis obliterans, peripheral arterial embolism, frostbite, and late ergotism; and a vasospastic group; i.e. Raynaud's disease, secondary Raynaud's phenomenon, scalenus anticus syndrome, and some causalgias.

The treatment of acrocyanosis will be omitted because the disease is so mild. The treatment of hemangioma will not be discussed because it is largely surgical, and because the defect is not primarily ischemic. Erythromelalgia will be disposed of by saying that its treatment is wholly symptomatic.

Since all the diseases we are discussing have the common defect of ischemia we need not take up each disease separately. We can discuss the treatment of mild and severe vasospastic disease, and then the treatment of mild and severe organic occlusion.

Principles of Treatment

Two principles underlie the treatment of ischemic diseases of the extremities. 1. The use of measures that decrease the need for blood flow; preventing and controlling injury and infection. 2. The use of measures that increase the flow of blood; food, warming, vasodilator drugs, interruption of the sympathetic innervation, and certain exercises and physical apparatus. These two main principles will be discussed in order, and then we shall deal with the application of treatment in different types and degrees of ischemia.

Measures That Decrease The Need For Blood Flow

Infections and traumatic lesions require the circulatory increase of inflammation. More inflammation is necessary if the lesion is uncontrolled, and less if the injury or infection is localized and controlled. The need for blood flow in ischemic limbs may be reduced by avoidance of need for inflammation, and by localizing or abolishing infection when present.

Patients with severely ischemic limbs having infected, injured or subsequently gangrenous areas, require bed rest as a sort of "splinting process" to aid healing, and large doses of penicillin, say 100,000 units intramuscularly six times per twenty-four hours, for some days in order to localize and diminish the lesion.

Measures to decrease the need for blood flow find their greatest use in preventing open lesions. Infection, indolent ulceration, and gangrene, can be traced in considerable part to carelessness, or to ignorance of the danger of trauma, whether the trauma be physical, chemical, thermal, bacterial or mycotic. Normal intact skin requires little circulation whereas a local infection such as a furuncle requires an inflammatory increase in circulation sufficient to make the skin feel "hot". The fact that circulation in the cool skin is only about 2 cc of blood per 100 cc of tissue per minute, and in the "hot" skin some 50 cc per 100 cc of tissue per minute, shows the increase in circulation demanded by in-

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*Read before the Medical Society of Delaware, Wilmington, October 9, 1951.

**Chief, Peripheral Vascular Section, University Hospital; Assistant Professor Clinical Medicine, University of Pennsylvania.

LIBRARY OF THE

flammation. Tissues with ischemic circulation should, therefore, be protected from injury and infection.

It is not too much to say that in the whole field of peripheral ischemic diseases, the benefit resulting from instructing patients in the prophylactic care of their feet, is greater than the sum total of the benefits resulting from all other measures used in this field. Detailed instruction on care of the feet should be given any patient having ischemic disease of the extremities, preferably before any open lesion develops. Each instruction should be carefully explained even if it requires several appointments to clarify them all, as full knowledge of the importance of each point immensely increases the patient's cooperation. Once he thoroughly understands, it takes little of his time to carry out all of the points, and with occasional adjustments of the instructions, the physician can often avoid time-consuming series of treatments and still afford the greatest good that is possible in this field of disease.

The various instructions are well-known to you, and I simply wish to emphasize the importance of the patient's understanding them. They are usually listed as "care of the feet" and when typewritten they fill the greater part of a sheet of paper. The major headings are: (1) proper footwear for different conditions, shoes, socks, overshoes; (2) corns and calluses as a result of improper footwear; (3) washing, oiling and powdering of feet; (4) early detection and treatment of dermatophytosis; (5) chiropody without trauma to living tissue; (6) application of heat to feet only by direction of physician; (7) preventable accidents to feet; (8) etc. The sheet should include instructions to promote vasodilatation, i.e. keeping warm, regular meals, and avoidance of the vasoconstrictor, tobacco.

Avoidance of tobacco is essential in the treatment of thromboangiitis obliterans and in the severe vasospastic diseases, and is highly desirable in all ischemic diseases of the extremities. Cooperation on this point usually assures cooperation in the whole regimen outlined for the patient. Only a full explanation of the harmful effects of tobacco will persuade a patient to give it up.

Measures Designed to Increase The Blood Flow

It has already been said that the means of increasing the flow of blood to ischemic extremities are: warming, food, vasodilator drugs, interruption of sympathetic innervation, and certain exercises and physical apparatus. Each of these will be discussed separately.

(a) **Warming**. No heat greater than body temperature should be applied directly to an ischemic area. Although it will increase blood flow, local heat will so increase the metabolic needs of the part that it materially increases the need for circulation. Furthermore it may burn the limb. An amount of heat that would do no harm to a normal limb will burn a markedly ischemic limb because the poor blood flow will not circulate the heat from the limb to the body. Heat that would cause only erythema in a normal limb may cause blistering of an ischemic limb, with the blistering going to indolent ulceration.

Heat can, however, be used to great advantage if it is applied elsewhere to the body. If the feet are ischemic, and the hands are not, the hands and forearms can safely be immersed in warm water, 110°F., producing vasodilatation in the feet usually within a few minutes. Heating pads and blankets can be substituted for the water. This reflex vasodilatation appears to result from a warming of the vasomotor center by blood coming from the heated part. It is useful in causing vasodilatation in hospitalized patients. It has the disadvantage of causing sweating, and it is not well tolerated for more than an hour or two at a time, or when frequently repeated.

(b) **Food,** probably by its specific dynamic action, tends to cause peripheral vasodilatation. Its effect is readily apparent when a fasting subject, having cool hands and feet, is given a meal. The hands and then the feet become warm. When a patient with ischemia of an extremity is asked, for some reason, to omit a meal, it is, therefore, well to keep him thoroughly warm in order to prevent vasoconstriction.

(c) Numerous **drugs** have been advocated for their peripheral vasodilator effect. Many of the powerful vasodilators, however, such as histamine, nitrites, and tetraethylammonium, have the disadvantages of short action, of widespread effect, and of narrow margin of safety. Doses sufficient to cause more than transient vasodilatation may lower the blood pressure alarmingly, especially in elderly patients with arteriosclerosis. The drugs of choice are those that appear to have a selective and prolonged action on the peripheral circulation and can be given orally. I know of no drug that quite equals alcohol in these respects. One or two ounces of whiskey should be diluted and given at 3-4 hour intervals. Papaverine in its accepted dose of 1 grain orally is less effective than whiskey and the same is true of methacholine in its usual dose of 0.2 gram orally. The drug priscoline is probably as effective as alcohol and has obvious advantages. Thyroid is a valuable vasodilator in patients having low metabolism. Intravenous injections of typhoid vaccine, or better typhoid H-antigen exert a powerful peripheral vasodilator effect because of the fever produced. Doses should be sufficient to cause fever but not to cause chills since chills are accompanied by vasoconstriction. Its spesial usefulness will be described later.

(d) **Interruption of Sympathetic Innervation.** Since the sympathetic nerve fibers supplying the vessels of a limb normally exert much more vasoconstrictor effect than vasodilator effect, interruption of sympathetic innervation results in nearly as great vasodilatation as the vessels are capable of. The interruption is accomplished temporarily by novocaine block of the appropriate sympathetic chain, and usually permanently by sympathectomy. A patient is chosen for sympathectomy if he (she) has severe symptoms of ischemia which fail to respond to medical measures but do respond temporarily to a vasodilatation test such as that using novocaine block, or if the limb has very excessive vasomotor tone, whether this tone is apparent (cold, wet, limb) or is disclosed by appropriate tests. Since sympathectomy is a major operation, senile and very depleted patients should not be chosen.

Bilateral lumbar sympathectomy of males frequently causes sterility and the patient should be warned of this, but he should be reassured that it will not cause impotence.

(e) **Special Exercises and Physical Apparatus.** Many years ago Dr. Leo Buerger popularized the use of exercises now known by his name, to increase the flow of blood in extremities. When an ischemic foot is elevated it is blanched and relatively bloodless, but when dependent it regains its color and some minutes later becomes cyanotic. Elevation of the limb, for a few seconds, blanches the foot again. The dependent foot gains some increment of circulation as a result of the hydrostatic advantage, but when long dependent, its circulation stagnates as a result of increasing venous pressure. Perhaps it is well to remember that a patient should be instructed to carry out Buerger's exercises by reclining on the bed or on a couch with his back propped up by pillows, and carrying out the following sequence: Foot dependent for 2-3 minutes, level for 3 minutes, elevated for 10 seconds, and dependent for 2-3 minutes, etc. for a total of a half hour several times a day. I have no doubt that Buerger's exercises are a valuable adjunct to treatment of a severely ischemic limb and that they serve a second purpose as a mild, body exercise, beneficial to an elderly, bedridden patient. Those patients who cannot tolerate the exercise, because they are too weak, and those having chronic ulceration or gangrene with signs of spreading infection should not be given these exercises. These latter patients may benefit from the Sanders oscillating bed. If correctly, adjusted, this bed alternately lowers the feet considerably, and raises them slightly, and serves the purpose of Buerger's exercises without tiring the patient, and probably with less tendency to spread infection.

Suction and Pressure therapy, or 'Pavaex' therapy, as it is sometimes called, acts in the same general way as Buerger's exercises, in that it increases blood flow in a limb by pressure changes. You are familiar with the "suction boot" in which the patient's limb is placed, the cuff that surrounds the thigh, and the cycle of varying pressures: Suction of 60 to 120 mms. of mercury for ½ to 1 minute, to promote the flow of blood into the limb, alternating with a pressure of 30-40 mm. for 5 seconds, to allow venous outflow. It is contraindicated when there is ulceration, gangrene, or other infection, because the widely varying pressures exert a massaging action that tends to spread infection. I think its special usefulness is with patients sustaining recent, sudden embolism. Some blood must be brought into the limb within the first few hours. If embolectomy and paravertebral novocaine blocks fail to accomplish this, suction and pressure frequently is successful. It usually can be used for two hours five times a day for several days at a time without making the thigh sore under the cuff. Suction and pressure can also be used to advantage in the case of the patient with severe, chronic, ischemia without infection, if he has pain that is relieved by the procedure. If suction and pressure brings color into his foot more rapidly than Buerger's exercises do, and his pain is relieved by the suction and pressure, it should be used for an hour or two each day for as many days as it appears useful.

TREATING DIFFERENT CONDITIONS

I should like now to say something about the application of these different treatments to the various clinical problems. I have already said that we need not discuss each disease, but can deal with the treatment of several disease categories: mild vasospastic disease, severe vasospastic disease and mild and severe organic occlusive disease. These are rather arbitrary categories, and it must be remembered that organic occlusion usually has some vasospastic element, and that severe vasospasm may produce some very distal arterial thrombosis with occlusion. There is one other important category: that of sudden, severe, arterial occlusion as exemplified by femoral or iliac arterial embolism.

(a) **Mild vasospastic disease,** such as early Raynaud's disease or mild Raynaud's phenomenon usually responds when the patient avoids using tobacco and wears warmer clothing. If these measures are insufficient some vasodilator drug may be useful. If, as is often the case, the patient's metabolism is low, the administration of thyroid is usually effective. In the case of any vasospasm of the upper extremities alone, one must study the patient sufficiently to rule out scalenus anticus syndrome, either with or without cervical rib. This may require surgical correction.

(b) **Severe vasospastic disease** that fails to respond to the measures listed for treating the mild form may require sympathectomy, as well as treatment of any underlying disease. Pure primary vasospasm, as seen in Raynaud's disease, is usually much more severe in the upper extremities than in the lower. Preganglionic section in the thoracic area is usually successful in abolishing the spasm, causing the symptoms of coldness, numbness, and digital pain to disappear. The operation makes the hands dry, and it is usually necessary to prescribe cold cream, or some other oily hand lotion, to prevent the discomfort resulting from the dryness. The present operation causes only a transient Horner's syndrome. It usually is permanently corrective of excessive vascular tone in the affected limb, but there have been instances of return of symptoms within weeks to years. If cold is the precipitating factor of the patient's vasospasm, instead of advising sympathectomy, the physician may suggest that the patient move to a location with a warmer climate.

(c) The **treatment of mild** or early peripheral **arterial occlusion** due to arteriosclerosis or thromboangiitis obliterans, which may be manifested merely by some blanching or coldness of the extremity on exposure to a cool environment, with no pain and no intermittent claudication or ulceration, requires the use of all the prophylactic measures described under "care of the feet." It is essential in thromboangiitis obliterans and advisable in arteriosclerosis for the patient to avoid the use of tobacco. The patient must dress in such a way as to escape the effects of cool air. Evidence of recent thrombosis suggests the use of anticoagulants. In the case of thromboangiitis obliterans there may be some benefit from eradicating even questionable foci of infection, and in the case of arteriosclerosis of using a low cholesterol diet. The essence of the management of the ischemia is to protect the ischemic part from trauma and from infection by bacteria and fungi.

(d) **Severe,** more or less chronic, **peripheral arterial occlusion** is the main hospital problem in the field of peripheral arterial disease. The ischemic symptoms in the extremities, such as blanching, coldness, cyanosis, parathesias, pain, intermittent claudication, atrophic changes of the skin and nails, rubor of the foot on dependence, indolent ulceration, and at the worst, anesthesia, vesiculation and gangrene, require intensive medical treatment, sometimes including sympathectomy, and unfortunately occasionally amputation. If there is ulceration or gangrene the patient should be kept in bed without lavatory privileges, and large doses of penicillin should be administered for at least several days. Warm saline dressings and, several days later, gentle removal of superficial dead tissue, are required to help initiate drainage of encapsulated infection. Amputation can usually be avoided if chronic infection and gangrene is limited to the toes, and in thromboangiitis obliterans even gangrene in the foot may not require amputation of the limb. A toe should be amputated only when most of it is deeply gangrenous and when its base appears to have gained sufficient circulation to heal. McKittrick has been able to avoid leg amputations in some arteriosclerotic patients, whose gangrene did not permit toe amputation, by amputating through several of the metatarsal heads.

There is little capacity for vasodilatation in the limb of such a patient, but insofar as there is any capacity for vasodilatation, appropriate vasodilator drugs and measures should be used. A thermoregulated foot cradle, set at 80° to 90° is advisable. In the case of the patient having no ulceration or gangrene or only superficial ulceration, the vasodilator procedues and bed rest, perhaps allowing bathroom privileges, should be used, and it is safe to employ Buerger's exercises, the oscillating bed, or suction and pressure therapy. The value of any one of these physical procedures to any one patient is best learned by noting whether it relieves pain, or improves color or the general "nutrition" of the foot. It goes without saying that analgesic dugs, even opiates for short periods, are at times necessary in treating ischemic pain.

Sympathectomy has much to offer in patients having high vascular tone as evidenced by cyclic blanching, cyanosis or abnormal sweating of an extremity. Naide and Sayen have found that the rate of cooling of the fingers in a standard cool room will allow classification of patients as having "high or low" peripheral vascular tone. Other factors being equal, those with high vascular tone gain more from sympathectomy than do those with low tone. Patients whose limbs have some capacity for vasodilatation, as measured by vasodilatation in response to heating the body, to posterior tibial nerve block, or to paravertebral novocaine injection, are especially promising candidates for sympathectomy.

Intravenous injections of typhoid H-antigen are especially useful in patients with thromboangiitis obliterans having very painful lesions of two or more extremities. Multiple ischemic limbs cannot be heated promptly by sympathectomy. The vasodilator effect of typhoid H-antigen given every second day commonly relieves pain. A trial dose of one million organisms, if it causes no reaction, should be followed a day later by ten million, and if a mild fever, without chill, results, the dose should be increased on subsequent administrations in order to retain the same reaction. Patients usually tolerate several such intravenous treatments. They are contraindicated in the elderly patient with arteriosclerosis because of the possibility of precipitating arterial thrombosis.

(e) **Treatment of peripheral arterial embolism** differs in some ways from that of the more chronic arterial occlusive diseases. Peripheral arterial emboli not uncommon in rheumatic heart disease and following infarcts of the left ventricle, ordinarily produce sudden, severe symptoms. There is the danger that other emboli will be thrown elsewhere in the systemic circulation. Embolectomy should be performed if the ischemia is so severe that there is danger of losing a limb, provided the patient is seen within six hours of the time of embolism. One important problem is to prevent further thrombosis, both at the site from which the embolus came, and at the site where the embolus lodged. This requires the use of the anticoagulants, first heparin, and perhaps later dicumarol.

Another important task is to lessen vasospasm. Vasospasm secondary to embolism may be severe, and if the usual medical vasodilator methods fail to relieve it, paravertebral novocaine injection may be necessary. This paravertebral block serves a second purpose in showing how much of the ischemia results from vasospasm and how much from fixed occlusion, and guides therapy accordingly. Repeated injections may be required to initiate adequate circulation. Paravertebral blocks should not be performed in the face of full anticoagulant therapy because of the danger of hemorrhage at the site of the needle. Sympathectomy is only occasionally resorted to during the acute ischemic phase following embolism, because it may contribute further to

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shock. Sympathectomy is usually more useful later, when the danger of shock is passed, other measures have been made full use of, and vasomotor tone is shown still to contribute to the ischemia.

The greatest dangers of peripheral arterial embolism not excepting the attendant spasm, are further embolism and the propagation of thrombi at the site where the embolus lodges. Anticoagulant therapy certainly lessens propagation of thrombus and prevents unnecessary blocking of collaterals. It probably lessens the incidence of further embolism.

The routine of anticoagulant therapy now consists of the following: the clotting time and prothrombin percent of the patient's blood are measured and if found approximately normal, he is given the following anticoagulants: 50 mg. heparin intravenously every 6 hours, until the clotting time, 6 hours after any injection, is elevated to twice the control level; and dicumarol 300 mg. by mouth, the first day, 200 the next, and 100 the next. Before each dose of dicumarol, the prothrombin percent is taken, and if found to be reduced to as low as 20 percent of normal, the projected dose is omitted. The anticoagulant regimen calls for clotting times before every second administration of heparin during the first 2 or 3 days, and for a prothrombin per cent preceding each administration of dicumarol. Short-cutting these safeguards has allowed dangerous bleeding that usually responds to transfusions of fresh blood but may require, in the case of dicumarol, administration of one or more 100 mg. injections of Vitamin K or, in the case of heparin, an injection of 50 or more mg. of protamine.

Summary

Ischemic limbs are troublesome to the patient because of subjective symptoms of coldness, fatiguability and pain. They are dangerous because, depending upon the degree of ischemia, infection and gangrene may occur. These severe complications may often be avoided by employing measures that reduce the need for blood flow, antibiotics and bedrest in early infections, measures that increase the blood flow, and in cases of arterial occlusion measures designed to develop a collateral circulation. Amputation of limbs can often, though not always, be avoided when these measures are undertaken promptly.

Discussion

Dr. R. W. Murray, (Wilmington): I think you all have recognized that Dr. Montgomery is an authority on this subject. It has certainly been stimulating to hear him.

There are a few points that I would like to emphasize from a very practical point of view. One is the cessation of smoking. Nicotine is poison to these people who have this disease and equally as poisonous to those that have peripheral arteriosclerosis from diabetes or other causes. It has been amply demonstrated experimentally and clinically that it has a marked basal effect and vascular effect. I have a notion that nicotine is equally harmful to the coronary functions in the case of arteriosclerosis.

Another important factor is avoidance of trauma in the individual whose circulation is seriously compromised in the lower extremities. That makes me think of two patients under my care at the present time. One, a woman 61 years old, a diabetic, had an arterial occlusion. She was treated in the hospital for several weeks with anticoagulants, etc., and it looked like the woman was going to live. She went home and one night her instep itched and she scratched it, and she had three little abrasions on that instep. Within a week we had to do a mid-thigh amputation on that patient.

I have another chap who has the most marked degree of calcification I have ever seen in an x-ray film. He got up one night to rub Sloane's liniment on his knee because it hurt him. He developed an ulceration on his knee. That has been five months ago. He still has the ulceration on his knee, which is getting progressively larger. I have already applied for amputation.

Incidentally, I would like Dr. Montgomery to say something about this. That chap is an individual on whom we did a temperature test and the side of the ulcer dropped one or two degrees after the plot. He would be one of the candidates for paradoxical gangrene, and an individual that would be made worse by a sympathectomy. We still use it occasionally. I have more or less restricted it to those cases in which I want to do a test synthetic block and for some reason or other many are unsuccessful, and then I have given the test. In some instances it worked out very well in that use. It does seem to be very inconstant in its action and not reliable like synthetic block is.

Another point—the popular things used to overcome vasospasm: Several popular things are the intravenous use of ether or novocaine. But it must be borne in mind that these have a general vasodilating effect: that they not only affect the extremities that you want to affect, but the whole body.

It seems reasonable to assume that if you want your maximum degree of improvement in circulation, you had better do a sympathetic block, because there it is just the extremity that you effect, not the whole peripheral vasodilatation, and you can get more blood where you want it, from the point of view of a general vasodilatation.

Dr. Montgomery mentioned some of the powerful vasodilators, such as histamine. I would like him to dilate on the use of that a little bit.

Dr. W. W. Moore (Wilmington): I would like to take this opportunity to thank Dr. Montgomery for this fine discussion. I would like also to take this opportunity to stress one important adjunct in diagnosing of the various therapeutic agents, that is the use of the constant-temperature room. To my knowledge there is no constant temperature room in use at any of the local hospitals. The operating of one of these rooms has been discussed in various surgical meetings, but thus far we have been unable to obtain one. In my rounds of hospitals to evaluate the use of steam-temperature studies, I was discouraged whenever I ran one series of tests and came back to a patient later and found a different answer. Consequently, I have ceased the use of histometric readings entirely, and have retreated to one of the small examination rooms to do my skin temperature studies, and even with this retreat I can't use the machine as accurately as I know it can be used. And I would like to put in a ''plug'' here, for obtaining one of the constant-temperature rooms in one of our hospitals.

Dr. L. B. Flinn (Wilmington): As many of you know, we have been interested particularly in the metabolic clinic in Delaware Memorial Hospital in investigating the use of peripheral histamine in the lower extremities. After Dr. Monson's work came out there were one or two rather dramatic instances which came to our attention. Dr. Flanders developed a modification of that technique, which made the procedure more practical, so that up to now perhaps we have administered this in perhaps 1000 instances, with perhaps 15 or more different operators, so that in our hands, so far, with the precautions we have used, it has been an innocuous procedure. I would be interested in hearing Dr. Montgomery's findings when he found some bad effects from its use. As to what good it does, I am not prepared to give any final conclusions, but in an article in publication at the present time by Flanders-Steckler and Jones, it shows clearly in their group of cases that in instances where the other measures, including alcohol and priscoline have not helped in such cases, and the arterial histamine has in most cases caused rather good results.

Another phase of the problem has interested us, particularly lately, and that is that evidence at present suggests that giving histamine in the femoral artery gives considerable information as to the location of the main arterial obstruction, which is desirable from the standpoint of prognosis and perhaps sometimes from the standpoint of where an amputation should be done, if and when that undesirable occasion arises. From the specimens dissected after operation so far, we have been encouraged in that the level of the histamine flush on the leg has been or is a very excellent indication of the level of the main obstructive block. This may prove to be of some significance since most of these cases are slow in developing, and therefore one would not expect very great improvement in collateral circulation. One would suppose that had developed to the fullest extent by the time the case develops a lesion on the toe.

I would be interested in Dr. Montgomery's thoughts on this subject; also on the time or occasion for a lumbar sympathectomy, and also to thank him for his discussion of a most interesting problem.

Dr. Montgomery: I am much obliged to the three discussors. I feel as though I agree with every word said, and as to Dr. Flinn's, I sat there and got information which I didn't know. As to that intra-arterial histamine, I don't know much about that. I have heard a little of the itching and wheal formation—no dangerous reaction, and the increase in flow as measured against other drugs is not great. I am sure there must be a large technical element in that work that Dr. Flinn has done and that he has studied it much more expertly than we have.

I might have misgivings about picking the level of amputation by any one method, including histamine, partly because the measure is usually made on the skin. In histamine the vasodilatation would be on the skin that we can see, and there can be a considerable difference between the muscle and skin flow. I have seen patients with good flow down to the knee with large muscle masses grey-colored up into the groin. That is not a criticism, but I would just be, as with anything else, somewhat cautious to take over the decision of a level of amputation from a surgeon but would leave that to him. I am really only talking to myself, now, Dr. Flinn.

Perhaps I ought not go into the consideration of sympathectomy. The hour is getting late.

I was interested in the remarks about the constant-temperature room. I was the one vascular member of the Committee of the Heart Association that had to determine the standards and equipment for the Board's O.K. of the clinic, and I had to think fast as to what to say regarding a constant-temperature room, and I quickly came to the conclusion that it was certainly essential for a clinic that called itself a vascular clinic. I expected to be overwhelmed by people saying "That is an unnecessarily expensive requirement," but I have had more compliments than criticisms.

It is terribly difficult in measuring skin temperatures to draw an accurate conclusion without a constant temperature room, and in the winter it is possible to make one, by opening and closing the window frequently, but it seems to me that the man that is asked to carry the vascular responsibility should be backed eventually—I don't mean necessarily now—with equipment that can let him hand out measurements, instead of guesses, or even well-founded clinical conclusions.

Certainly it seems to be true, as Dr. Murray said, that the sympathectomy can draw blood from an essential part. I think occasionally, first with a restricted capacity for blood flow, sympathectomy does indicate the need for amputation. That is often why I don't call for sympathectomy on those patients having fixed decrease in blood flow.

We, too, sometimes use a little priscoline for heat. I am interested in seeing how many are doing it. I think it helps a little to bring about the tests by reflected heat, more rapidly.

OPERATIVE MORTALITY IN COLON RESECTION

A Statistical Analysis

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The present study was prompted by a recent shocking and distressing experience on the Surgical Service of the Memorial Hospital—a fatal outcome in three consecutive cases undergoing resection for malignant disease of the colon or rectum. The fact that each case represented involvement of a different segment, and furthermore, that the surgery in these three cases was performed by three different operating surgeons, might seem to minimize the significance otherwise attributable to such a regrettable experience. On the other hand, when it is realized that two of the deaths occurred within a period of two weeks, and all three within three weeks, it becomes evident that such an appalling incidence cannot be shrugged off as "just one of those things." The impact is felt most violently perhaps by those most closely identified with the individual case, but it extends also to related hospital personnel—house staff, especially the surgical resident group, nurses, anaesthesia department and even to the lay public, to a greater or lesser extent, depending upon the importance in the community of the particular patient that failed to recover.

Under these circumstances then, it seemed rather natural and perhaps even mandatory that each of these cases be carefully and impartially reviewed. Why did these patients die? It seemed equally desirable that the hospital Record Room be visited and an inquiry directed toward a longer period and a larger group of cases if a proper perspective was to be had. There is nothing like a "look at the record" to separate the chaff of impression from the wheat of fact. An honest, unbiased analysis of one's results is not only good for one's soul; it may also be good for one's future patients.

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Accordingly, three fundamental premises were adopted for this analysis: (1) the period studied should not be less than five years; (2) only cases involving colon and/or rectal resection would be included; and (3) the source material would be derived from pathology-laboratory records, the requirement being that a gross and microscopic description of a resected segment of colon be a part of the case record. It was felt that this requirement would prevent the inadvertent inclusion of cases in which only biopsy was done, or local excision of malignant polyps was carried out. It would also avoid the inclusion of those cases having more limited procedures such as abdominal exploration, with or without colostomy. While it is readily appreciated that procedures in the latter category are not without risk and have their own not too low mortality rate, it was felt that our present study should be focused upon colon resection exclusively, since the three fatal cases initiating this inquiry were of this type.

I think it will be agreed that if any worthwhile conclusions are to be gleaned from a statistical study, the analysis must confine itself to certain specific and restrictive limits. A corollary to this belief is the conviction that the prime motive should be to search for the truth, not to write a paper. It is hoped that these objectives will have been observed in the present study.

Realizing that statistics are inclined to be dull and often confusing, an attempt has been made to exclude irrelevant data and to reduce the figures to the simplest form possible. Accordingly, the cases involved in this review have been classified as follows:

Table I.

Group A . . . Cases operated upon (Jan. 1, 1952-Mar. 1, 1952).
(N.B.—It is in this group that the three successive fatalties occurred.)

Group B . . . Cases operated upon (Jan. 1, 1947-Jan. 1, 1952).
(N.B.—Covers both malignant and benign lesions.)

Group C . . . Cases operated upon for malignant disease (Jan. 1, 1947-Jan. 1, 1952).

Group D . . . Cases operated upon for benign disease (Jan. 1, 1947-Jan. 1, 1952).

Group A received our scrutiny first. In this group are ten cases all operated upon in January and February of 1952 and all for carcinoma of the colon or rectum. The essential data so far as fatalities are concerned are summarized in Table II.

An attempt to evaluate the foregoing cases in greater detail brings to light the following pertinent facts:

Case 1. The cause of death cannot be established beyond a doubt, but since the patient tolerated liquids after removal of Levine tube on 4th P. O. D. and expelled flatus and had bowel movements up to time of death, it does seem proper to exclude any peritoneal factor as contributing to death. Perhaps the most significant observation was that noted by the medical clinician on the day before death when signs of failing circulation made their first appearance.

Table II.

Case	Age	Diagnosis	Operation	P. O. D. of death	Autopsy	Cause of death
1. (F. G.)	84	Ca. hepatic flexure; Calculous cholecystitis	Rt. hemicolectomy; Ileo-trans. colostomy; cholecystectomy	7th	No	Congestive heart failure?
2. (G. B.)	72	Ca. sigmoid colon	Sigmoidectomy; Primary anastomosis	12th	Yes	Massive gastro-intestinal hemorrhage from duodenal ulcer
3. (E. L.)	58	Ca. of rectum	Abdomino-perineal.; Proctosigmoidgectomy	12th	No	Pulmonary embolism?

Pre-operative EKG had been reported within normal limits and chest x-ray prior to operation failed to disclose any evidence of congestive heart disease or other pathology.

While it is realized that post-operative circulatory failure may be but a terminal manifestation of another underlying factor—peritonitis, electrolyte imbalance, thrombo-embolism, etc., it would seem that in this instance the two factors of (1) age (84 years) and (2) the magnitude of operation necessary, could themselves have contributed directly to the fatal outcome.

This inference is not to imply, of course, that age alone is a contraindication to major colon surgery. Neither is it to be assumed that a two-stage procedure would have been safer. Indeed, on both these points our experience has led us to feel strongly to the contrary.

Case 2. Here autopsy was obtained and findings were such as to clarify the complicated post-operative clinical course. In this connection it should be noted that post-mortem examination does not invariably reveal the true cause of death, and even when positive findings are observed, these must be correlated with the clinical course if conclusions are to be reached that are sound and relevant.

In this case the immediate post-operative period was complicated by a low-grade ileus, excessive fluid loss via Levine tube contributing to a difficult electrolyte problem. Hypokalemia, elevated B. U. N. and at one time a troublesome muscular twitching suggesting disturbed calcium metabolism were successive and concomitant developments.

By his 5th P. O. D., however, these factors delaying recovery seemed to have been overcome, only to be followed by appearance of large amounts of tarry and bright red blood in stools and later via Levine tube when its use was resumed. In spite of an active program of blood replacement, patient expired on his 12th P. O. D.

At autopsy a localized area of wound infection was noted, but the anastomosis was found to be intact, and there was no evidence of peritonitis. The most significant finding was a large (3 cm.) ulcer crater in the second portion of the duodenum responsible for the massive gastro-intestinal hemorrhage first appearing on the 7th P. O. D.

While the autopsy findings unquestionably revealed the source of this patient's ultimately exsanguinating hemorrhage, it would be oversimplification not to incriminate the operation itself in so far as his delayed recovery from the colectomy prevented what might otherwise have been undertaken, viz., abdominal exploration to locate the source of intestinal bleeding and then disposition of it as circumstances permitted. In this instance the ulcer was located well beyond the ampulla of Vater, and definitive attack would have been technically difficult if not impossible.

Case 3. The failure to obtain an autopsy in this case is especially regrettable since the precise sequence of events responsible for death remains obscure. The surgical resident's impression as noted on the chart was "probable pulmonary embolism" and this seems a tenable assumption. The patient's peritoneal reaction was uncomplicated and he was allowed a full diet on his 6th P. O. D. His first evidence of any circulatory difficulty became apparent two days preceding death and was not attended by pleural or substernal pain or by any suspicious leg vein findings. The occurrence of a sudden rise of temperature to 102° following removal of his perineal packing on the 7th P. O. D. and a subtle indication that things were not quite right was noted; the exact relationship of this incident to his ultimate death five days later is a matter for speculation, but of unestablished significance.

A further factor of uncertain importance is that operation was delayed for two weeks after admission because of vague chest pain, which upon medical evaluation, was ascribed to possible mild myocardial infarction. EKG was not conclusive.

This case, at our monthly mortality conference, was discussed at some length, and the general consensus as to cause of death was "Pulmonary embolism on 12th P. O. D.; sublethal pulmonary infarction on 9th P. O. D."

* * *

As indicated earlier in this presentation, it was hoped that an additional survey extending over a period of five years, and consequently embracing a larger number of cases might provide a basis for proper evaluation of our successes and failures in the field of colon surgery.

Table III.
MORTALITY RATE BY GROUPS

GROUP A . . . 2-month Period (Jan. 1, 1952-Mar. 1, 1952—3 consecutive deaths)	
Total number cases colon and/or rectal resection	10
Number of deaths	3
Mortality rate	30%
N.B.—All resections for malignant disease.	
GROUP B . . . 5-year Period (Jan. 1, 1947-Jan. 1, 1952)	
Total number cases colon and/or rectal resection	122
Number of deaths	6
Mortality rate	4.9%
GROUP C . . . 5-year Period (Jan. 1, 1947-Jan. 1, 1952)	
Total cases having resection for malignant disease	110
Number of deaths	5
Mortality rate	4.5%
GROUP D . . . 5-year Period (Jan. 1, 1947-Jan. 1, 1952))	
Total cases having resection for benign disease	12
Number of deaths	1
Mortality rate	8.3%
GROUPS A & B . . . (Jan. 1, 1947-Mar. 1, 1952)	
Total cases having colon and/or rectal resection	132
Number of deaths	9
Mortality rate	6.8%
GROUPS A & C . . . (Jan. 1, 1947-Mar. 1, 1952)	
Total cases having resection for malignant disease	120
Number of deaths	8
Mortality rate	6.6%

Group B represents the five-year period January 1, 1947 to January 1, 1952, and covers all cases having resection of colon and/or rectum during this period. The total number is 122 and except for twelve cases having resection for benign disease of the colon, the entire group was operated upon for carcinoma.

Reference to Group D will show that of the twelve cases having colon resection for benign disease one died—a mortality rate of 8.3%—while in the 110 patients having various types of resection for carcinoma, five died—a mortality rate of 4.5%. This difference is cited not because it is believed significant, but only to illustrate how easily one can reach premature and unwarranted conclusions from statistics alone. As a matter of fact, while all but one case in the benign group had complications of either diverticulitis or irradiation colitis, the one fatal result followed proctosigmoidectomy for severe ulcerative proctocolitis. A series of this size, viz., twelve cases, has no value in itself but is included because as stated at the outset, the cases within this group all had colon and/or rectal resection and in a broad sense factors influencing mortality are about equally operative in the benign and in the malignant group. At least, so it is assumed by us, and this observation seems to be borne out by the experience of others.

As indicated above, Group C comprises cases having a malignant lesion of the colon and resected during the five-year period 1947-1952; Group D represents the benign colon cases resected during the same period. The total number of cases in these two groups was 122, of which six died subsequent to operation. The mortality rate for all colon cases resected during this period was 4.9%. (See Table III.)

What is to be learned from a critical survey of the records in the fatal cases in Group C?

Case I. While no autopsy was obtained in this case, the cause of death seems rather clear and can be ascribed to a technical error at the time of operation. An extremely bulky mass, originating in the fixed portion of the sigmoid colon and extending by continuity into its mesentery and retroperitoneal space above the promontory of the sacrum, required high ligation of the inferior mesenteric artery. The mistake consisted of attempting an obstructive type of resection to preserve the rectum rather than settling for a proximal colostomy and a more extensive resection of the distal segment. At the time of operation the circulation of the distal segment appeared to be adequate and this judgment was concurred in by another surgeon who was called to the operating room for his opinion. The patient's post-operative course rather promptly proved this to be an error of judgment, however, since evidence of non-viability of the distal segment could be demonstrated deep in the operative wound and the patient died of a pelvic peritonitis. (At the depth of resection necessary, it had not been possible to elevate the distal segment above the peritoneal level).

Case II. Death in this case seemed clearly preventable and even now on recalling the

Table IV.

MORTALITY ANALYSIS

Group C—Resection for Malignant Disease of Colon and/or Rectum
(5-year period—Jan. 1, 1947-Jan. 1, 1952)

Case	Age	Diagnosis	Operation	P. O. D. of death	Autopsy	Probable cause of death
I. (T. J.)	68	Ca. of sigmoid	Obstructive resect. of sigmoid with retroperitoneal lymphadenectomy	4th	No	Peritonitis; Vascular impair of distal segment
II. (E. J.)	68	Ca. of sigmoid	Sigmoidectomy; Primary anast.; Bilat. femoral vein interruption; (Prophylactic)	15 min. after operation	No	Post-anaesthesia
III. (M. S.)	77	Ca. transverse colon	Trans-colectomy; Primary anast.	4th	Yes	Congestive heart failure
IV. (E. R.)	61	Ca. sigmoid with extension to bladder	Sigmoidectomy; Primary anast.; Total cystectomy; Complete hyster.; Bilat. salpingo-ooph.; Append.; Excision of vagina; Bilat. uretero-sigmoidostomy	14th	No	Cerebral thrombosis (Embolism?)
V. (B. L.)	67	Ca. of rectum	Abdomino-perineal.; Procto-sigmoidectomy with total hyster.; Bilat. salpingo-ooph.; Partial vaginal excision en bloc	32nd	No	Cerebral thrombosis; Pulmonary embolism

circumstances of four years ago, the recollection is none the less painful, not only in its effect of boosting the mortality rate, but because the patient happened to be a friend of the analyst of this series.

The operation consisted of sigmoidectomy and primary anastomosis for a small freely movable lesion in the mid sigmoid. This procedure was followed by bilateral femoral vein ligation. (This was during a period in which routine prophylactic ligation was being done). The operation was unusually smooth and easy and anaesthesia—cyclopropane with curare—apparently uncomplicated.

The patient left the operating room with B. P. 120/90 and reported in excellent condition. Her rating as an operative risk was classified Grade I. She was returned to her room not fully reacted but "in excellent condition" and within ten minutes on receiving an emergency call from her special nurse, she was found pulseless, pupils dilated and fixed, and respirations to have ceased. Since an autopsy was not obtained, it is possible that some cause other than acute respiratory obstruction as suspected clinically, might have been responsible for this patient's sudden and unexpected death. This experience, however, does seem to point forcibly to the advantage of a post-anaesthetic recovery room, and indeed this unfortunate episode undoubtedly hastened the installation of such a facility at the Memorial Hospital.

Case III. The benefit of an autopsy in this case leaves less room for speculation. Patient was admitted with partial obstruction which was overcome sufficiently by Cantor tube to permit primary resection and anastomosis for a lesion in transverse colon.

Post-operative course seemed satisfactory until congestive heart failure developed rather abruptly on the 4th P. O. D. and at autopsy, while no organic cardiac pathology was found, there was evidence of marked pulmonary edema. The peritoneal cavity was entirely negative. One might postulate that the pulmonary edema could have resulted from injudicious use of parenteral fluids and this point actually was debated with some vigor even in the autopsy room. The clinical impression, however, strengthened by patient's age (77 years) was that the direct cause of death was acute cardiac decompensation induced by anaesthesia and operation.

Case IV. This case was of especial interest because of the unexpected findings at operation. The pre-operative impression had been that the primary pathology involved the urinary bladder with extension to pelvic lymph nodes and vagina, and on basis of these findings in another hospital, patient was rejected as inoperable. At operation a bulky mass, primary in the sigmoid colon with invasion of bladder and fixation to the uterus, required a block resection of sigmoid colon, bladder and uterus in their entirety and a portion of the vagina. In spite of extensive disease present, it was possible to circumvent the tumor, effect a primary anastomosis of colon to rectosigmoid and transplant the ureters into colon proximal to anastomosis.

The patient withstood the procedure extremely well, and post-operative course continued to be entirely satisfactory with excellent urinary output per rectum. She was on full diet on her 8th P. O. D. On her 10th P. O. D. on awaking she complained of blurred vision with some temporal and frontal headache. No other intracranial signs or symptoms were observed at this time, and eye grounds were reported negative.

Two days later flaccidity of left arm and leg were noted and patient was unresponsive to normal stimuli. Gradually this picture became more profound and on following day, the 14th since operation, patient died. Unfortunately, autopsy was refused, but course followed over period of last four days seemed to warrant attributing death to cerebro-vascular accident. The highest B. U. N. reported post-operatively was 40 mgms. per cent, this on the 9th P. O. D.; five days later it was 19 and on day before death it was 10 mgms. per 100 cc. of blood. These findings, in combination with adequate urinary excretion and negative abdominal findings, would seem to eliminate either impaired renal function or peritoneal complication as factors in the fatal outcome.

Case V. The post-operative course in this case was complicated by a type of mental response that was interpreted as psychosis, making its first appearance on the 5th P. O. D. The patient refused most of her feedings, although her colostomy functioned normally and she had no nausea or vomiting. On occasion she would recognize members of her family and would get out of bed but behaved as if she had a mental block of some type. Her B. U. N. on the 5th P. O. D. was reported as 8 mgms. per cent. A pre-operative EKG was apparently normal, but on the 8th P. O. D. showed a posterior myocardial infarction. Its occurrence was marked by the patient's blurred mental state, and there was no accompanying circulatory embarrassment.

This development was the first evidence of thrombo-embolic tendency but a second occurred in the third week when evidence of thrombo-phlebitis appeared in the left leg. At this time patient was out of bed each day and eating quite well, but her mental response was still sluggish and confused. Her perineal wound was clean and practically healed.

On her thirty-first day it was observed that a left hemiplegia had developed shortly followed by bilateral flaccid paralysis and rapidly progressive circulatory failure. Death oc-

Table V.

MORTALITY ANALYSIS

Group D—Resection for Benign Disease
(5-year period—Jan. 1, 1947-Jan. 1, 1952)

Case	Age	Diagnosis	Operation	P. O. D. of death	Autopsy	Probable cause of death
I. (H. S.)	63	Extensive ulcerative procto-sigmoiditis	Abdomino-perineal.; Procto-sigmoidectomy	8th	No	Electro-lyte imbalance

curred on her 32nd P. O. D. and was attributed to cerebral embolus with perhaps pulmonary embolism as an ensuing factor.

This patient's course almost from the beginning was unsatisfactory, and yet it is conceivable that the thrombo-embolic complications might have been avoided if normal ambulation, etc., had not been prevented by her mental state. It was never satisfactorily determined whether this mental problem was a true post-operative psychosis or of organic origin.

The single death in this group (D) followed abdomino-perineal resection for a benign lesion of the rectum and sigmoid, the only fatal case in this particular group.

Case I. Death occurred on the 8th P. O. D. and was preceded for forty-eight hours by profuse sweating, excessive watery drainage from perineal wound and blood chemistries indicating hypochloremia. EKG's failed to indicate any potassium deficiency. (Photometric estimations not available at that time). While poor tolerance for fluids by mouth was noted, abdominal distention was not present, peristalsis was active and his colostomy functioned normally on his 6th P. O. D. In spite of failing on two occasions to obtain a positive biopsy for carcinoma prior to operation, it was assumed that specimens were not obtained from a representative area and accordingly, after usual preparation by antibiotics, operation was carried out within a few days. In view of actual pathology present (ulcerative procto-sigmoiditis) it seems likely that the process was probably more extensive than appreciated and that patient was operated upon during a stage of crisis. In retrospect, colostomy only, or a longer period of preparation, might have prevented the fatal outcome.

Even if this "second guess" seems too conjectural to be taken seriously or to be related to the cause of death, it does seem valid to suggest that the fluid and electrolyte problem should have been recognized earlier in the post-operative course, and at a time when the chloride depletion, etc., were reversible. The final picture was that of pulmonary atelectasis and congestive failure.

It is felt that more skillful management of this case both in the pre-operative and post-operative periods might have altered the final outcome.

Discussion

The foregoing case-by-case study brings to light certain interesting facts as tabulated below:

Table VI.

CAUSE OF DEATH	NUMBER OF DEATHS
1. Peritonitis	1
2. Late circulatory failure (Not ascribable to P. O. shock)	2
3. Cerebro-vascular accident	2
4. Pulmonary embolism	1
5. Electrolyte imbalance	1
6. Bleeding duodenal ulcer	1
7. Complication anaesthesia	1
	9

The single death from peritonitis occurred in 1947 and none from this cause has been recorded in the subsequent 131 cases.

The age distribution is also of interest; only one fatal case was under sixty years of age, and three of the nine fatalities occurred in patients past seventy years of age.

Table VII.

AGE DISTRIBUTION

Age period	Number of cases
58-67	4
68-86	5
Total	9

While one would like to feel that with more expert management before, during, and after operation, all the fatal cases in this series might have been avoided, such perfection is perhaps beyond human attainment. There can be little doubt, however, that the cases of peritonitis, of electrolyte imbalance, and that ascribed to post-anaesthetic complication should have been preventable. Since all these occurred in the five-year group (1947-1952), the mortality rate for this period would accordingly have been 1.6% rather than 4.9%.

Table VIII.

DEATHS BY YEARS (Carcinoma only)

Year	1947	1948	1949	1950	1951
Number of cases	2	1	0	1	1

From the above table it is evident that our start upon the next five-year period is anything but propitious. With three deaths in ten cases, and within a two-month period, it is apparent that if we are only to equal the mortality rate of the previous period we shall have to keep our deaths down to two in the next one hundred cases.

It must be admitted that a grave and deplorable weakness in this study is the woeful lack of post-mortem findings to verify or disprove the clinical impression as to cause of death. As indicated in Tables II and IV, only two autopsies were obtained in nine fatal cases. Frankly, this revelation was entirely unexpected, since over the last five years the hospital autopsy record shows an annual rate of 55%. While it is readily admitted that clinical impressions are often at variance with factual data obtained from carefully performed autopsies, it is felt that in the seven of nine cases in which an analysis of the hospital records had to be depended upon, certain pertinent conclusions were possible, and that therefore some importance can be attached to a review of this kind. What definite conclusions, then, seem logical and relevant?

Conclusions

(1) Except for the single case of postoperative peritonitis, the patients died of causes that might be associated with any other major surgical procedure.

(2) Since during the period covered by this study, the complication of peritonitis played an unimportant role, there appears to be no reason to alter our past policy of technical management of colon lesions.

No attempt has been made in this review to evaluate individually the various drugs used in the pre-operative preparation of colon patients. In respect to operative technique, however, a rather uniform practice was followed. First, anastomosis almost exclusively, was of the open type, and secondly, preliminary or complementary colostomy was not employed except in those cases obviously obstructed.

In a small group of cases in which the lesion was at the pelvic peritoneal reflection and in which low anterior anastomosis was done, a complementary transverse colostomy was added. Recently, however, we have been tending toward omission of the colostomy.

(3) The age factor in two fatal cases — one at 84 and one at 77, emphasizes again the greater hazard implicit in major surgery for patients beyond the seventh decade. In spite of this obvious fact, it would be interesting, however, to review the cases beyond age of 70 with recovery following colon resection.

(4) While cases having colon and rectal resection as part of a pelvic evisceration for recurrent or intractable carcinoma of the cervix were not included in this review, Case IV. is illustrative of others requiring en bloc removal of contiguous small bowel, stomach, bladder, etc., where these structures were invaded by the primary colon or rectal growth. In spite of several cases of such character encountered in the series, their greater magnitude is not reflected in the mortality table, and from this standpoint, at least, such procedures would appear to have been justified.

(5) Finally, the incidence of fatal complications of a vascular nature—thrombo-embolic and cardio-vascular—stands out boldly enough to warrant critical analysis of the cause and prevention of such "accidents." They do represent a real challenge to our better understanding of this problem, and it is to be hoped that with increased awareness their occurrence as a mortality factor can be materially reduced.

The author gratefully acknowledges the assistance of Dr. D. A. Baltz, senior surgical resident, in obtaining from the Laboratory and from the Record Room the 132 hospital records involved in this statistical analysis. His cooperation greatly expedited the proper grouping of cases.

The author wishes to thank also the members of the Surgical Department for permitting the use of their case records in the preparation of this review.

SOME CHANGING CONCEPTS OF SODIUM METABOLISM IN CARDIAC AND RENAL DISEASES

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Within the past 120 years the low salt diet has probably become the most prescribed diet in medicine. Voluminous literature and therapeutic results in ridding the organism of edema on this regime have proved this tool to be of the utmost value, particularly in edema

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*The work on renal and electrolyte research being done at the Memorial Hospital is being financed by a grant from the United States Public Health Service, National Heart Institute, Bethesda, Maryland.

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of cardiac or renal origin. Conditions in which it has been used since the turn of the century have included hypertension and nearly all stages of renal dysfunction. Experiments within the past 15 years have clearly indicated that the kidney in chronic renal disease or in congestive heart failure cannot readily excrete sodium chloride, and that further addition of salt will be paralleled with increasing edema. Studies with sodium bicarbonate and sodium bromide have given similar results, yet there has been an occasional diuresis with $NaHCO_3$ in the eclamptic syndrome. From all of this evidence the physician has become convinced that sodium is detrimental, and the low sodium diet is used synonymously with the low salt diet.

Recent evidence demonstrates, however, that at times, restriction of salt is harmful and that reversal of this regime may be dramatic and life saving. Such conditions as salt-losing nephritis as described by Thorn exemplify this. Here the tubular ability of the kidney is such that salt is lost in large amounts and a true state of salt depletion ensues with its typical picture of azotemia and shock. Decreasing results from mercurial diuretic drugs in cardiac edema with increasing doses may also precipitate this state, and here, too, replacement of lost sodium is urgent. This syndrome may occur in the presence of edema where one may argue that the total body sodium is still increased, but here one deals as well with tonicity as well as volume of the extracellular fluid. Hypertonic (3-5%) sodium chloride has been used dramatically in this condition. Removal of large volumes of ascitic fluid in cirrhosis and salt loss in tuberculosis as well as with lesions of the CNS may also give rise to a state of salt depletion even though the low salt regime has not been employed. Thus, in the edema of cardiac or renal origin, or in the uremic state of chronic nephritis, although salt restriction may be of marked benefit to the majority of cases, certain cases may be harmed by such a procedure.

CARDIAC

In the edema of congestive heart failure, there is a decrease in renal blood flow, a decrease in glomerular filtration rate, and an increased filtration fraction. There is also a marked reabsorption of sodium at the distal tubules of the kidney. The influential factors working on the tubules are not clearly understood. Aside from the intrinsic capacity of the tubules to reabsorb sodium, it is felt that other influences, such as hormonal, are exerted. The resultant urine is hypotonic in nature for sodium. Although the above deranged kidney function is present, Newbergh, in calculating renal tubular osmotic work, has shown that it is extremely difficult for the kidney to excrete such a urine. He has shown that the simplest urine for excretion is an iso-osmotic urine where little renal energy is required. Diuretics act efficiently by allowing the passage of a more isotonic urine, but the low salt diet cannot possibly meet this physiological requirement.

On the basis of renal energy Fox and Friedberg have recently treated the syndrome of congestive failure with large doses of sodium lactate and potassium acetate the potassium being used to replace a cell deficit which apparently arises in the pathogenesis of heart failure. Interestingly enough, it was found in certain cases that the kidney could well tolerate sodium administered as hypertonic sodium lactate, and the resultant feature was the excretion of an iso-osmotic urine with diuresis and clinical improvement. Thus, although the kidney cannot handle sodium as chloride, bicarbonate, or bromide, perhaps the tubular ability for sodium with lactate is different. Further speculation might well incriminate the anion, rather than the cation sodium.

Recent work from England has indicated that congestive failure on the basis of cor pulmonale, after responding to routine therapy, may well show a renewed tubular ability to excrete sodium chloride. This, however, was not found true in rheumatic valvular congestive states. In such a case where recovery of the tubular ability to excrete sodium has occurred the question arises whether one would be justified maintaining the reduced salt intake and thus again forcing the kidneys to excrete a hypotonic urine.

At the Memorial Hospital within the past several months a case of chronic congestive failure having responded nicely to digitalis and mercurial diuretics, was given sodium lactate by mouth. In follow-up examinations it has been observed that there has been no recurrence of edema and that cadiac function has been satisfactory with excellent kidney function. Another case which was refractory to mercurial diuretics, but which did not display all the criteria for the low salt syndrome, was treated with hypertonic sodium chloride plus mercurial diuretics and within several days after receiving about 60 grams of salt lost nearly all of his edema.

Thus, in congestive heart failure, perhaps the indefinite continuance of the salt restriction program may not be best for all cases. Ideally the physiological approach should be the best, and perhaps the case which could excrete an isotonic urine with sodium lactate and thus clear his edema, might perhaps be better maintained on large doses of sodium rather than on less than one gram of salt a day.

NEPHROTIC SYNDROME

The nephrotic syndrome which has been recognized for centuries has always been a major problem in therapy. Because of edema, salt restriction has been a favorite adjunct of therapy. The many therapeutic attempts with thyroid, albumin, ACTH, cortisone, etc., are too numerous to mention. Here, too, the urine is hypotonic, and the sodium concentration in the extra-cellular fluid is hypotonic as is fairly typical with most forms of edema. A cell deficit of potassium has been proven by tissue analysis. With these facts in mind Fox began a program of treating such cases with large doses of sodium acetate and potassium acetate. In this manner, he was able to raise the sodium concentration in the extracellular fluid, thus probably causing a relative increase in filtration and tubular mass of sodium and by concomitantly replacing a cell deficit of potassium was able to bring about a diuresis in a large percentage of cases. Although spontaneous diuresis characterizes this syndrome, and although many medications may produce a temporary diuresis, by allowing the kidney to continuously put out a hypotonic urine, recurrenee of edema after most therapeutic procedures is extremely common. A very significant feature of the treatment with large doses of sodium lactate is that edema usually does not recur as long as maintenance therapy is continued. Thus, this syndrome, which has been a problem in management for centuries, may in certain cases be controlled indefinitely with the above medication. Although statistics cannot yet validate it, it is felt that the possibility of healing the kidney lesions of the nephrotic syndrome is better with the maintenance of sodium and alkali therapy.

UREMIA AND ACIDOSIS

The management of apparently terminal kidney failure is always a major problem. Salt restriction is used commonly, but in the rare case this may be harmful, as Thorn has shown with his cases of salt losing nephritis. Many feel that one should not attempt to correct the acidosis because these patients at times will compensate to a low CO^2 combining power. Attempting to correct this acidosis with 1/6 molar sodium lactate has frequently caused harm to the patient.

Elkington and Tarail have shown that the severely damaged kidney often cannot excrete potassium and, although this therapy was prevalent for many years it is now seldom used. Although potassium may cause sudden death in kidney failure because of the breakdown of tissues which liberate cell potassium into the serum, at times its use may be urgent since in very rare cases of chronic renal disease excess potassium is lost through the kidneys. Recently muscle analyses have shown that even in face of high serum levels there may be a cell deficit of potassium. Associated with this there is apparently increased chloride in the cell along with some added sodium. As sodium lactate is a precursor of bicarbonate and as Pitts has shown that excess bicarbonate will facilitate an excretion of excess chloride at the distal tubules of the kidney, a therapeutic regime has recently been used at the Memorial Hospital in the treatment of kidney failure using intensive doses of hypertonic sodium lactate. In all, 14 cases have been treated with this regime and the improvement has been very satisfactory in all cases except one. Potassium was given continuously and calcium was used to prevent tetany and to replace the continuous loss of this ion in chronic renal disease.

Along with the clinical improvement all cases have displayed a dramatic reduction in the urea nitrogen and an immediate correction of the acidosis. In studying the kidney handling of sodium it has been found that when given in this form the kidneys may handle it almost normally and at times excrete an almost isotonic urine, thus probably reducing energy. The potassium probably facilitates an excretion of some sodium. Nearly all cases put potassium in the cell and several cases have shown clearance of edema in which they were retaining large doses of sodium in the body. It was apparent in these cases that the volume of distribution of sodium lactate was much greater than the extracellular compartment. It is felt that probably the clinical picture of terminal renal failure may at times be biochemical in origin and reversible in certain cases with large doses of hypertonic sodium lactate. From the data available so far it is apparent that sodium was not harmful in these cases. Maintenance therapy has appeared necessary in most of these cases. The effect on urea nitrogen is not believed to be a simple osmotic diuresis. All of these cases were kept on a 20 gm. protein diet and yet one patient has gained 30 pounds of true weight. Transfusions have been much further apart on this therapy.

Summary

The concept that the kidney in cardiac and renal disease cannot excrete sodium is probably not valid as a generalization. Experimental work has indicated that much sodium may be excreted when administered as sodium lactate. Perhaps in certain circumstances it is the chloride which necessitates the sodium rotation. Physiologically, it is much more desirable for even the damaged kidney to excrete an isotonic urine. Recent experiments with large doses of hypertonic sodium lactate indicate that it may be a usable therapeutic tool in some cases of cardiac and renal failure. This type of therapy should not be recommended for general use at this time, but its use indicates some of the changing trends in sodium metabolism.

SODIUM CELLULOSE SULFATE

A New Medium for Barium Sulfate

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and

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The diagnostic ability of barium sulfate has long been recognized; its daily use is indicative of the importance placed upon it by radiologists. However capable and important barium sulfate has been and is at present, certain frailties have been recognized and refinements desired. It has long been noticed that when barium sulfate water suspensions have been employed as diagnostic agents, that a sharp line of delineation is lacking at the periphery of the barium water mixture adjacent to the intestinal mucosa. A certain lack of adhesiveness and tenacity is noticed. These in various instances may complicate or make more difficult roentgenologic diagnosis. Instillation of barium water mixtures enemas in certain cases present a field of vision more opaque than in other portions resulting from a suspension that is not purely homogeneous. Where this occurs loops of intestine posterior to the colon are not visible in air contrast films. Retention of sufficient barium sulfate coating by the mucosal layer on the colon is often deemed inadequate so that smooth continuous translucent lines are not visible.

The above mentioned factors, in the main, have been the causative initiation for various investigations for innovations in the barium sulfate water suspension formula. The inclusion of such agents as mucilage of acacia[1], tragacanth[2], bentonite[3], gelatin[4], starch[5], kaolin[6], and more recently a hydrogel sodium carboxymethyl cellulose[7], have all been used; with varying degrees of success having been reported.

With these facts in mind, in an attempt to alter the viscosity, density, and tenacity of barium enema material different agents were utilized. The use of quartenary ammonium wetting agents did not seem to be of any clinical value.

The hydrogels were definitely of value in this work. The principal hydrogel used in this experiment was sodium cellulose sulfate[8] (S.C.S.) medium viscosity.

Sodium Cellulose Sulfate

S.C.S. is the sodium salt of cellulosic acid sulfate. S.C.S. is available as a light tan dense free flowing powder which is soluble in both hot and cold water. It is offered in two viscosities, medium and low. The medium viscosity being in the range of 300-1000 centipoises and the low viscosity being in the range of 20-70 centipoises, both in 2% aqueous solutions at 20° centigrade[9].

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a. **Viscosity**. The viscosity of aqueous solutions increases with the concentration and at sufficiently high concentrations gels may form. Viscosity is also dependent upon the temperature and decreases as the temperature rises. The decrease being temporary, the viscosity returning to its original point as the temperature is lowered.

Chart 1

% Low Viscosity S.C.S.	%$BaSO_4$	Condition after 4 hours
0	20%	Completely settled out
2%	20%	Thick layer on bottom
4%	20%	Thin layer on bottom
6%	20%	Very thin layer on bottom

Chart 2

% Medium Viscosity S.C.S.	%$BaSO_4$	Condition after 4 hours
2%	20%	Fairly heavy layer on bottom
3%	20%	Thin layer on bottom
4%	20%	Very slight layer on bottom

It has been observed to best hold all of the barium sulfate in a 20% suspension (Chart 2) that the amount of S.C.S. used approached the limits at which gels are formed. However, a 20% barium sulfate suspension represents almost, if not, double the weight of barium sulfate usually used for one barium enema. Therefore, a suspension may be formed yielding a semi-permanent homogenous finely dispersed and suspended weight of barium sulfate.

b. **Toxicity**. Initial screening tests indicate S.C.S. to be completely non-toxic.

c. **Method of Preparation** of 4% Stock Solution. Forty grams (40Gm.) of S.C.S. medium viscosity is slowly and steadily sifted into 1000 cc. of tepid deionized water with constant agitation until thorough dissolved. This is greatly facilitated by means of a small high speed mechanical stirrer. The solution is then set aside for one hour, during which time complete hydration occurs. At the end of the hydration period the mechanical stirrer is again applied for several minutes. It should be noted that steady and slow addition of S.C.S. is required inasmuch as rapid addition will predispose the formation of large slowly soluble clumps of S.C.S.

Of the above mentioned stock solution 90 cc. is taken, when ready for final preparation and admixed with 185 gm. of barium sulfate and further diluted with deionized water, with agitation, to a finished volume of 1500 cc. This represents one barium enema, and can be prepared directly prior to use or several days in advance. Multiple amounts may also be as easily prepared.

It has been observed that the concentration of S.C.S. need not be extremely accurate for best results but the relation of the amount of barium sulfate was kept rather regular. Too great an amount of S.C.S., after hydration, increased the mucilagenous effect and prevented proper coating of the intestinal mucosa. Increasing the viscosity of the material overcame this difficulty and a viscous adherent medium was obtained.

Results

A series of 100 patients, in-patient and out-patient, were given barium sulfate enemas with sodium cellulose sulfate as the fluid medium. In all cases the solution was well tolerated with no allergenic manifestations noticed. Having no food value there was no increase in normal colonic peristalsis. Because of the fine and homogenous suspension the deflocculated barium sulfate gives a greater roentgenologic opacity which makes for finer, more sharply delineated bowel lesions. Mucosal detail is greatly increased by the use of this mixture with no incidence or tendency of "caking" exhibited in post evacuation films.

Where air contrast films have been done a beautiful translucency is seen in conjunction with third dimensional effect. Diagnosis in certain instances is certainly made more readily, due to the ease with which these films may be read. In one instance a berium enema was administered wherein the barium suspension reached and refluxed through the ileocecal valve. Post-evacuation and air contrast films showed with extreme clarity the entire colon, ileocecal valve, and that portion of the small intestine adjacent to this sphincter.

Diverticulae and polypi are more easily defined as being well coated, luminescent and empty, projecting into the lumen of the colon. They appear more distinct than tumors which are coated with a still more dense barium sulfate coating. Craters of ulcers of the colon are more easily identified.

In practically all cases the films were read with more ease and presented continuous opalescent haustral lines and reflections.

Summary and Conclusion

1.) Various agents were utilized in an attempt to alter the density and adherent properties of barium enema material, with the hydrogels being of most value.

2.) Sodium cellulose sulfate in a 4% stock solution, when further admixed with barium sulfate and diluted, forms a stable semi-permanent homogenous suspension.

3.) Administration of this suspension for barium enemas and air contrast films affords more easily read films, with continuous translucent reflections and a sense of third dimensional vision.

4.) S.C.S. appears to offer the roentgenologist a more refined diagnostic procedure in the use of barium sulfate enemas and air contrast studies.

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TUMOR CONFERENCE—BONE TUMORS*

Edited by R. W. Frelick, M. D.**
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Dr. Frelick: Today we are going to review Bone Tumors and ask several of the Staff members to comment on their experiences with the problem. Bone Tumors are difficult to diagnose and our experience with them is meager—we will try to pool our knowledge today by letting each participant concentrate on one aspect of the problem. However, we must realize that there is little general agreement about bone tumors. Even bone pathologists frequently have differing opinion when confronted with a problem case.

I shall first ask Dr. Abbiss to outline a pathological classification of malignant bone tumors and to present several slides demonstrating each type. Today we will not consider multiple myeloma, except to classify it.

Dr. Shaw will next discuss the radiologic diagnosis of bone tumors and Dr. Iddles will present a series of cases seen here in the last 15 years. Dr. Cassells and Dr. Bailey will then discuss in more detail the two chief types of tumor, the giant cell tumor, and the osteogenic sarcoma.

Dr. Abbiss: A great many books have been written about the pathology of bone tumors, and it is difficult to know what to include in a classification of bone tumors. Are we going to include lesions arising in bone, lesions arising in marrow, or those arising from structures near the bone? That is always the difficulty in deciding on a classification. The one I am going to use this morning is the one proposed by Ewing in 1939 and adopted by the Registry of Bone Tumors of the American College of Surgeons.

Ewing split them up into the osteogenic series; that is, those arising in bone, and the chondroma series, the giant cell tumor series, the angioma series, and the myeloma series. You will see that he has put in tumors, which strictly speaking, are not arising from the bone itself but from other tissues. He has put in the reticulum cell sarcomas, the lymphosarcomas, and lastly the liposarcomas. He has split them up into benign and malignant. In the osteogenic series on the benign side we have evostosis and the osteoma, and then on the malignant side we have the osteogenic sarcomas, of which he listed six different types. (The actual differentiation is not really important.) They are listed according to their site and to their cell type, and also according to whether or not they were very hemorrhagic or whether they were what he calls the sclerosing type. So we have subperiosteal, the telangiectatic, which is the very vascular type of osteogenic sarcoma, the sclerosing type, in which you may get almost normal bone formation, the periosteal type, then the fibrosarcomas, which he has put into the medullary subperiosteal types, and lastly the parosteal type, or the capsular type arising in joint capsules. In the chondroma series we have the benign chondroma, and on the malignant side the chondrosarcoma, and he also put there the myxosarcoma as arising in cartilage. About this there is some doubt. In the giant cell tumor series, the malignant variety, and then he called the benign variety the epiphyseal giant cell tumor. Of course, the majority of giant cell tumors do not metastasize, but some of them do and these form the malignant variety.

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*This is a transcribed record of a recent Tumor Conference held at the Memorial Hospital, Wilmington, Delaware.

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Under the angioma series he included the angio-endothelioma, and the diffuse endothelioma on the malignant side, and the latter, by the way, is the so-called Ewing's tumor. The angio- endothelioma is probably related to Ewing's tumor and we have a possible example in our series which I will demonstrate in a moment.

The benign variety of the angioma series are, of course, the cavernous and plexiform types of angioma.

Then he listed the myeloma series. Now these tumors arise from cells of the bone marrow and are not, strictly speaking, arising from bone. The best known, of course, is the plasma cell myeloma, but there are variants of that, depending on the particular type of cell one sees, the myelocytoma, the erythroblastoma, and the lymphocytoma. The reticulum cell lymphosarcoma is in a class by itself and resembles reticulum cell sarcoma arising in lymph nodes, and it might be said that it is not a true bone tumor but arises in tissue other than bone.

Lastly, the liposarcoma. This tumor probably arises from fat cells in bone marrow. This classification is by no means complete. For example, it misses out the so-called osteoid osteoma, which again may or may not be a true tumor. Some people think it is a tumor, but it is not included in this particular classification. The classification does form a short, useful working schedule and it does cover most of the primary bone tumors.

I thought we might throw on to the screen a few examples of bone tumors seen in this hospital over the years, some of which are controversial and quite interesting. I would like to say that the diagnosis of bone tumors, particularly malignant ones, is one of the most difficult phases of pathology, perhaps only exceeded by the diagnosis of lymphoid tissue tumors. One of the reasons is that bone tumors are uncommon tumors and it is only by working in a large center to which tumors are sent from all over the country that one can get really expert at their diagnosis. For example, even if one works in a big center in a large city, the number of bone tumors seen would be very small. Most of our accurate knowledge of bone tumors can be gained from registries in which these tumors have been studied over long periods of time. I would like to say too that the diagnosis of bone tumors by frozen section is fraught with danger, and that whenever there is any doubt about diagnosis, adequate paraffin sections must be prepared and studied. Even then it may be difficult to make a definite histological diagnosis.

First slide: Osteogenic sarcoma of skull. When this patient finally died she had a massive tumor. This slide is from a postmortem specimen. The blue staining areas are areas of bone formation. In some areas of this tumor the tumor cells actually line the capillaries.

Second slide: This is another osteogenic sarcoma. This one is not forming bone and I put it on because it is an extremely cellular tumor. You will notice it is vascular and shows beautiful mitotic figures. If there is anyone who hasn't seen a mitotic figure there is a good example. It is a highly vascular sarcoma with the spindle type cell predominating.

Third slide: I have several giant cell tumors. The first one I am putting on is a fairly definite one, the next one is a little controversial. The characteristics of the giant cell tumor are the large giant cells, probably osteoclasts that you see here. The second slide was first called an angioma arising from the pelvic bone. On the right you have muscle and on the left tumor, and as you can see, it looks as though it were infiltrating muscle. Under higher power we see large vascular spaces. There is a giant cell with numerous nuclei in it, and that gives a clue to its diagnosis. This slide has been all around the country and many different diagnoses have been given. (The x-ray pictures of this patient are on the viewing box.) The tumor responded to x-ray therapy but has now recurred. My first impression was that it was an angioma arising from muscle, but I now believe it to be a giant cell tumor, probably of malignant type. The striking feature of this tumor is its tremendous vascularity. You can see that giant cells are scattered all through it.

Fourth slide: Now we come to another controversial slide, or I should say, tumor. This has been diagnosed as a Ewing's tumor. The features about this are that it is made up of a diffuse mass of rounded cells all pretty well the same size and shape. I thought after looking at this slide that it might easily be, not a Ewing's tumor, but a reticulum cell sarcoma. I would like to see some reticulum stains on it. That brings into focus the whole question of Ewing's tumor. Many tumors diagnosed as Ewing's tumor are not true Ewing's tumors. They are reticulum cell sarcomas, or may be metastatic tumors, and so on. In fact, Willis has even gone so far as to say the Ewing's tumor is just a dumping ground which if one goes through carefully is not a distinct entity. However, I put this on to give you some idea of what it looks like, although this might easily be a reticulum cell sarcoma.

Fifth slide: This last one is an example of a recent tumor in this hospital, a plasma cell myeloma. Under high power one sees that these cells consist of plasma cells. When you look at them closely you see that the nucleus is round and eccentric. There is the cytoplasm with the nucleus stuck down in one corner of the cell. That is a good example of a plasma cell.

Those are a few representative sections of tumors we have seen in this hospital. As you can see they don't cover the whole field by a long way. We have gone back to 1940 and even beyond that through our records and this shows how few bone tumors one does see, even in a hospital where malignant disease is seen perhaps more frequently than in most.

Dr. Frelick: Thank you, Dr. Abbiss. Dr. Shaw would you please discuss the roentgen diagram of malignant tumors?

Dr. Shaw: In the past, bone tumors were classified poorly and the nomenclature used was frequently inexact. Our specimen group of radiographs is of little value because of lack of verification and incomplete pathological standardization. Cross index methods now applied in setting up a pathologic x-ray file have increased the accuracy of such a file tremendously.

In any discussion of bone tumors classification becomes the greatest factor. It is my point to give the most accurate criteria of bone tumor diagnosis by the roentgen method. Any such discussion would be a mere group of words until correlated by the proper inspection and analysis of a well authenticated bone tumor film file.

The radiologic signs of malignancy in bone fall into ten categories with fairly sharp differentiation.

1. The earliest sign in an otherwise normal bone of a significant change is a localized ill-defined irregular area of increased density in the bone. To have previous films of the same bone showing normal structure followed by a change as described above is a significant early sign.

2. The second change to be seen is palisade needle-like spicules of bone density at right angles to the periosteal border of the bone. These spicules denote bone activity at variance with the normal structure.

3. Periosteal accretions of new bone when demonstrated are very valuable signs of abnormal activity. These accretions form cuffs at either side of the lesion at its periosteal periphery.

4. Periosteal irregular fiber-like spicules may be seen radiating from an area of damaged cortex and are frequently accompanied by periosteal accretions.

5. Localized expansion of bone which is of greater density than the adjacent normal bone.

6. Localized osteolysis-cortical or endosteal.

7. Localized irregular disintegration of a previously intact bone lesion.

8. Localized irregular cyst-like extensions and expansions of bone.

9. Metastatic lesions in other bones and in lungs.

10. Large expanding soft tissue tumor associated with normal underlying bone.

Most of the signs and criteria listed have their own and proper value demonstrated by analysis of films showing bone lesions. Analysis of a film of a bone lesion according to an orderly scheme using the above mentioned signs will allow good diagnostic efforts by the radiologist.

It is vitally important that the clinician specify a chest film when requesting a diagnostic management of a suspected bone tumor case. All available methods of examination should be carried out at once in these cases. Repeat examinations should be done at proper intervals determined by the apparent pathology.

The radiologist must find, classify as to benign and malignant and to make a gross pathologic diagnosis if possible. He must hunt for and map out metastases. He must re-examine and determine the pathology as long as the clinician will allow. The histo-pathologic diagnosis will be the province of the pathologist.

Dr. Frelick: Dr. Iddles has reviewed our experiences at this Hospital during the past 15 years.

Dr. Iddles: Over the past 10 years we have collected at least 20 bone tumors, excluding the common epulis and osteoma. (See Table 1). There may have been more, but this is as many as we have been able to find. Among them are 6 giant cell tumors. All are living and well except for the first one, whom we followed for one year and who has been lost to us ever since. As you can see from the table, most of these were fairly young, the oldest one being 63, which is older than usual for this type of tumor. We have 5 osteogenic sarcomas; the results of one we don't know since the patient is lost to follow-up. Three have died, and the fifth one is living and well eight years after a right mandibulectomy. She is the patient who was discussed today. These patients were quite young, except for one who was 63. We have 5 Ewing's sarcomas, all of whom have died, although one of them lived for 6 years. They are in a somewhat older age group, as you can see from the Table (40's and 50's), one of them being as young as 16, but they are generally older. We had 1 chondrosarcoma in a 43 year old female who died in 14 months. This was not a positive diagnosis; it was an x-ray diagnosis and biopsy was not obtained. Another patient who had an aspiration biopsy compatible with chondro-sarcoma turned out to have a chondroma. And still another one who was thought to have a chondro-sarcoma had the lesion excised and pathology report showed there was no tumor present. We had 1 periosteal fibro-sarcoma; this is considerably more than any of the others, occurring in a woman of 58 years of age who died 2½ years after treatment. The last patient did not have true tumor, but was a three months old infant, who caused considerable controversy with a lesion in the left scapula which was thought to be osteogenic sarcoma. I think it was Dr. Coley who saw the patient and thought it was osteogenic sarcoma. Biopsy was taken here and sent to New York, and one or two pathologists there said it was osteogenic sarcoma. We were all ready to amputate the arm including the shoulder girdle, and I think Dr. Stewart and Dr. Foote of New York decided it was a so-called infantile cortical hyperplasia, so no surgery was done. The lesion has completely disappeared in the subsequent 2½ years, and the child is well.

Table 1

GIANT CELL TUMORS . . . 6

1 — F. Age 42 . . . Alive — 1 yr.
2 — F. '' 21 . . . living and well — 10 yrs.
3 — M. '' 63 . . . living and well — 8 yrs.
4 — M. '' 23 . . . living and well — 8 mos.
5 — M. '' 39 . . . living and well — 15 yrs.
6 — F. '' 8 . . . living and well — 9 yrs.

OSTEOGENIC SARCOMA . . . 5

1 — M. Age 17 . . . Result (?)
2 — F. '' 63 . . . died 5 mos.
3 — M. '' 21 . . . died 5 yrs.
4 — F. '' 23 . . . died 1½ yrs.
5 — F. '' 24 . . . living and well 8 yrs.

EWING'S SARCOMA . . . 5

1 — M. Age 16 . . . Died 1½ yrs.
2 — F. '' 50 . . . Died 15 mos.
3 — F. '' 72 . . . Died 3 mos.
4 — M. '' 49 . . . Died 6 yrs.
5 — F. '' 46 . . . Died 5 mos.

CHONDROSARCOMA . . . 1

1 — F. Age 43 . . . died 14 mos.

CHONDROMA . . . 1

1 — M. Age 41 . . . Result (?)

PERIOSTEAL FIBROSARCOMA . . . 1

1 — F. Age 58 . . . died 2½ yrs.

INFANTILE CORTICAL HYPERPLASIA . . . 1

1 — M. Age 3 mos. . . . living and well 2½ yrs.

Dr. Frelick: I am going to ask Dr. Casscells if he will discuss the significance and prognosis of giant cell tumors.

Dr. Casscells: It is nice to talk on the treatment of giant cell tumors because almost anything you say is bound to be right in one country or one section of a country because there is great controversy regarding the treatment. The results of treatment whether by surgery or by x-ray, I think by and large are fairly equal, depending upon whose statistics you use. The incidence of malignant giant cell tumors is quite low and the prognosis generally is good. As far as the treatment is concerned in this country, the consensus of opinion seems to be this: that those tumors that are amenable to resection, such as the end of the ulna, the femur and so forth, are best treated by total excision. Those that are inaccessible, such as places in the pelvis or in the body of a vertebra, are treated by x-ray therapy. The great majority of tumors occur at the end of long bones. (Incidentally, many people say that a giant cell tumor starts in the epiphysis, but in 1949 the British had a large symposium on giant cell tumors and Mr. Stewart Kaye said it was time people exploded the myth that giant cell tumors started in the epiphysis, when actually they start in the metaphysial end and not in the epiphysis.) Tumors that are located in the distal end of the femur or the upper end of the tibia which are very common sites, in fact, the most common, are usually treated in this country by surgery which includes excision of as much of the tumor as you can and then cauterizing with phenol or something of that sort and then replacement by bone chips.

Nowadays, very few people advocate using both x-rays and surgery. In England, however, the consensus of opinion is definitely in favor of irradiation. They have a fairly good series of cases that have been treated by irradiation and they have some 3 and 4 and 5 year cures now. Of course, most of their cases have not gone long enough to be sure about the end results of irradiation because they don't have the 10, 15 and 20 year cures that we have with surgery.

Some of the English surgeons say definitely that all giant cell tumors should be irradiated; that there is no place for surgery. Others say that it is probably the best way of treating them. There are certain advantages inherent in both ways of treating them. In surgery, if you can excise the tumor and pack with bone chips, you can probably cut down on the period of disability. In treatment with x-ray there is a prolonged disability. Sometimes in these large tumors it is necessary to treat them every six months for a period of two years or even longer. If you have a large tumor, especially in the lower extremities, then you have a long, long period of disability.

I have one case here I would like to show but before I do I want to say something about recurrence, because Geschickter and Copeland say that if a tumor is irradiated and recurs they should be excised. About 7 or 8 months ago when I had the patient I am going to show you (his x-rays at least) the radio-therapeutic consultant here from Memorial was very strongly in favor of irradiation and I asked him how Dr. Coley was doing them. He said that Dr. Coley excises the tumors and then if he gets a recurrence he treats them with irradiation. Dr. Coley does not, however, say this in his book so far as I know. On the one hand Geschickter and Copeland say that recurrences should be treated with surgery and on the other hand I understand that Dr. Coley has been treating them with x-ray. This makes a very perplexing state of affairs.

The patient I would like to present was a 21 year old man who had a large tumor of the distal femur. The x-rays when they were first taken were interpreted by everyone except Dr. Shaw as being an osteolytic form of sarcoma. Even after we had a punch biopsy, Dr. Allen still thought that it was a malignant tumor and he gave the boy a very poor prognosis.

Dr. Shaw thought all the time that it was a benign giant cell tumor. Because of the fact that it was large and located in a weight-bearing area and because there was some doubt in some people's minds as to whether or not this was malignant, the treatment was by surgery. It was excised and cauterized with phenol, neutralized with alcohol and then packed with bone chips. The sections, incidentally, were essentially the same as the biopsy. It was a benign giant cell tumor with large multinucleated giant cells and a very few stromal cells. The last x-ray of 1-22-52 shows some consolidation of the chips. However, he still has quite a way to go. What the picture will be in another six months is hard to say. There are two encouraging aspects, one is that the joint space is being maintained and the other is that there is some consolidation of the bone chips.

Dr. Frelick: Dr. Bailey has agreed to tell us something about the treatment and prognosis of osteogenic sarcoma.

Dr. Bailey: I'd like to start out with what little I have to say here by recalling a remark made by Dr. Henry Jaffe, the very competent bone pathologist, who when lecturing to a group of residents prior to their Board examinations on bone tumors, stated that if the diagnosis is 100% osteogenic sarcoma, the outcome is 100% fatal. In contra-distinction to that, a paper by Coley and Harold, of the Bone Tumor Department of the Memorial Hospital in New York, reports about 252 cases of osteogenic sarcoma, of which 59 cases survived five years or more. As soon as you start to analyze these cases you find out that two-thirds of them are osteogenic sarcoma in the loose sense. They are either fibro-sarcomas or chondrosarcomas. In this series they are only 15 of 252 cases that have what they call osteogenic sarcoma who survived five years or more.

The treatment of these patients is interesting and confusing. Of the 16 cases all had radical surgery, and in addition all but one had toxins or roentgen therapy or a combination of both. I guess some of you are familiar with Coley's toxin. Now to get away from this paper. There are some people who are advocating pre-operative roentgen therapy to the affected extremity, to the extent that it completely kills the extremity and than have surgical removal of the extremity. I have seen no figures reported on this type of treatment. An outgrowth of the paper by Coley and Harold was that fibro-sarcoma and chondro-sarcomas, particularly the chondro sarcomas, arising from the pre-existing cartilegous rests in the bone, are oftentimes of low grade malignancy. An early diagnosis by adequate biopsy with the histological appearance of a low grade malignancy may tend to alter the form of treatment in that excision of a lesion rather than radical ablation of the extremity may give just as good a result. Another thing that came out of this paper was that the site or origin in fibro-sarcoma, whether it be from the medullary cavity or periosteum, does not affect the prognostic view.

I'd like to summarize some of the conclusions reached by Coley and Harold, because I think it brings out several things. The part played by irradiation in survival is not easy to estimate. Most of the patients had it, in the period prior to 1940 pre-operatively. In 5 years they have given up pre-operative x-ray therapy. They hope soon to publish their results on that, so this may make an interesting comparison. Their routine post-operative toxin treatment was abandoned several years ago. There were no five-year survivals in the cases of osteogenic sarcoma located in the distal end of the femur. And here again, getting back to what Jaffe said originally that true cases of osteogenic sarcoma do not survive, they say to support the contention that five years is not a sufficiently long period upon which to base any results of this disease, that five of their 59 patients died of sarcoma after surviving for five years. Of these, 2 succumbed between five and six years, 2 between six and seven years, and 1 after fourteen years. Another patient was ambulatory fifteen years after amputation but had a large pulmonary metastasis. So they conclude that the patient with osteogenic sarcomas who survives for five years has only a 12:1 chance of escaping further evidence of the disease. Finally, they say a word about pulmonary metastasis. Lobectomy was carried out in two cases in this series. One patient died 18 months after the lobectomy and 61 months after amputation. And the other patient is living and free of evidence of disease three years after his lobectomy and eight years after his original amputation. The treatment of osteogenic sarcoma is still confusing. No one knows whether or not to give pre-operative radiation. Apparently radical surgical removal of the disease is necessary.

Dr. Frelick: I might mention that Dr. Caceres was in favor of and felt that preliminary work looked good for giving a killing dose of radiation prior to surgery. It must be given rapidly and be immediately followed by surgery. This radiation is supposed to prevent some of the spread which is supposed to occur at surgery.

Dr. Bailey: I just had another thought come to mind about these things and that is that we all in the course of our lifetime see very few osteogenic sarcomas and I wonder if we are really qualified to treat them. I, more or less, believe that they should be sent to a place like Memorial in New York or some place like that where they are seeing them in quantities.

Dr. Frelick: We will discuss this further at the end of the conference. I think in conclusion I would like to say a few words about

Ewing's tumors since time is getting late and there is not too much to say about it in any case, particularly as Dr. Abbiss mentioned some people even doubt that there is such an entity. In the so-called classic Ewing's tumor which occurs chiefly in the femur or tibia or shaft of long bones, it is the type of tumor which metastasizes early and it is characterized by the fact that it is probably the only type of bone tumor which metastasize to other bones. There is usually local pain associated with the lesion that becomes worse as the lesion progresses. The patient tends to run a febrile course during which he has moderate leukocytosis. It is doubtful that surgery is ever indicated although a few five year cures are reported after surgery. X-ray therapy is the treatment of choice and it is purely palliative, but it is good palliation with immediate relief of pain. People have reported as high as 6% to 10% five year survival, but these undoubtedly are rare and there may be some question as to whether they really were Ewing's tumors. On the whole the prognosis should be considered somewhat as that outlined by Dr. Bailey for osteogenic sarcoma but the treatment is different in that surgery is rarely indicated and the patient is usually given x-ray as a palliative form of therapy.

If there are any further questions or discussions we will be glad to try to answer them, although we are already overdue about ten minutes. As I pointed out earlier in the conference this discussion has proved our ignorance more than anything else, but it is an ignorance which is not only local, but it is also present in some of the bigger centers.

Dr. Pierson: It might be well to point out, from my limited experience in the field of bone tumors, especially multiple myeloma, that this is one of the few places where x-raying a person for pain and focusing on the site of the pain is sometimes rewarded by finding a bone lesion. I think that is also true in osteogenic sarcoma, but especially multiple myeloma.

Dr. Frelick: What do you feel about Dr. Bailey's comment about where these patients should be treated?

Dr. Pierson: I think confirmation of the diagnosis is very important but I don't know that it is true that more adequate surgery or x-ray would be available in another place, once the diagnosis is established. The diagnosis is the important thing.

Dr. Frelick: I am not too sure, either, whether it is necessary that they be treated elsewhere. I think it is important that they be registered at some central area so that someone else can include those cases in their follow-up.

Dr. Pierson: If you think of shipping them right away accurate diagnosis might be delayed, whereas, you can carry out a lot of procedures on the grounds, and then if you are still undecided, consultation, especially diagnostic, may be useful.

Dr. Frelick: Do you agree with that, Dr. Abbiss?

Dr. Abbiss: Yes, I think registration is the important thing. Some of these tumors are not common. I heard it once said that in a population of a million that you would see approximately one osteogenic sarcoma a year.

Dr. Frelick: I had hoped to be able to collect further cases from other institutions and also from the state, but figures in other places are incomplete. I am sure there are others in the state. It would be good if we could have all these seen in the state, registered and followed centrally, at least for our own benefit.

CHILDREN'S BEACH HOUSE

The Children's Beach House will reopen June 16, 1952, with a summer program for handicapped children, ages 6-13 years, who are the victims of such conditions as cerebral palsy, postencephalitis, deafness, speech defects, polio, etc.

In order to have optimum use of facilities, it will be the policy to accept children who are best able to participate in and enjoy group activity such as swimming, games, music and art. Speech therapy will be included as part of regular program.

The summer will be divided into two periods: June 16-July 22 and July 23-August 29. Acceptance of a child will be at the discretion of the Case Committee and Medical Advisory Board, since it is necessary in planning program to consider age groupings and severity of handicap. When advisable, a child may stay more than one period. There will be a nominal charge for those who are able to pay. Any

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Editorials

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"OUTMODED MEDICAL ETHICS"

Our attention has been directed recently to two new books, both of which find fault with the practice of medicine. Now this is still a free country, and we are not so thin-skinned that we cannot accept criticism, provided it is true and justifiable. But we suspect that some of the criticism aimed at the medical profession in recent months by professional writers have been tempered with a desire to be sensational rather than be accurate, to attract criticism of the ideas in order to promote the sale of the book, and all-in-all to win approval of utopian federal programs for the care of mankind in general.

We are particularly intrigued by the announcement relative to a recent book on medical ethics and their effect upon the public, a composition by a Chicago architect that is built on the flimsiest foundation yet to be blue printed. Two salient points were made in the news announcement about this book.

One cited that a Chicago doctor had developed a new treatment for arthritis that resulted in remarkable success, but "it was not sanctioned by the medical profession because it did not have the 'authority' of publication in a recognized medical magazine." If that isn't the most ludicrous statement of the year it will claim the honor until a sillier one is presented.

The second point made was that the author "was introduced to the problem of outmoded medical ethics when he became afflicted with arthritis in 1936. His subsequent cure and the rejection of that cure by medical circles led to his painstaking investigation into the overall problem."

This month the Arthritis and Rheumatism Foundation is launched in a national campaign to raise funds to conduct medical research to discover the cause and possible cure of the disease. If the Chicago architect has the cure he is certainly taking a roundabout way to inform General George C. Kenney, president of the national arthritis foundation, of it.

But it is the expression "outmoded medical ethics" that most concerns us. How can any intelligent person, least of all a would-be author, damn the principles of ethics of the American medical profession as "outmoded." Since when did the commandments of good conduct, fair dealing, honest service, professional integrity, and the like become outdated? What is the modern version of the virtues that our author would promulgate?

Are our ethics outmoded when they state that the "Profession has for its prime object the service it can render to humanity and reward or financial gain should be a subordinate consideration?"

Are we behind the times when we impose on ourselves the duty that "confidences concerning individual or domestic life entrusted by a patient to a physician, and the defects or disposition or flaws of character observed in patients during medical attendance should be held as a trust and should never be revealed except when imperatively required by the laws of the state?"

Should the inflation of the day cause us to reword our ethical rules that now state that "it is unprofessional to receive remuneration from patents or copyrights on surgical instruments, appliances, medicines, etc." or "to prescribe or dispense secret medicines or other secret remedial agents, or manufacture or promote their use in any way?"

No, our principles of ethics are not outmoded anymore than are the ten commandments.

Editorial, *R. I. M. J.*, March, 1952.

Traffic Safety

Each year at about this time, we as a nation of drivers and pedestrians find out from a Hartford insurance company how we fared in the previous year.

The Travelers annual book of street and highway accident data has just been published and we learn with dismay that almost *two million* of us were casualties in 1951. Specifically, 37,100 persons were killed and 1,962,600 injured in auto accidents last year.

The enormity of this toll is difficult to digest. Out of all context, a total of two million broken bodies from any cause is beyond description. For a sharper focus on two million deaths and injuries, think of them in terms of one or two at a time in accidents on roads in every corner of the country.

More to the point, think of them in terms of your own circumstances. Think of them when *you* drive or walk.

CHILDREN'S BEACH HOUSE

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child may apply regardless of financial situation. A professional staff and registered nurse will be in constant attendance.

In order to estimate plans for the summer, will you please send a tentative list of names of children you think would be interested and qualified to come, with a brief description of the child's condition, by April 15.

Applications may be secured from Mrs. John W. Carpenter, Greenville, Delaware — telephone 4-8664.

MISCELLANEOUS

Auto Casualties — 1951

Nearly two million casualties, the worst automobile accident toll in the nation's history, were recorded in 1951, according to figures released recently by the Travelers Insurance Companies.

Last year's traffic deaths totaled 37,100, an increase of 1,600 over the 1950 mark. The injury count soared to 1,962,600, more than 160,000 over 1950, the Hartford firm reported.

The death and injury totals are highlight statistics from "Lucky You," eighteenth in the annual series of traffic accident data booklets published by The Travelers. The company collects and analyzes accident statistics from each state.

More than 13,000 persons were killed and 570,000 injured last year by drivers who were exceeding the speed limit, according to the report. Excessive speed was "far and away the most dangerous mistake in driving" in 1951.

More than 11,000 drivers under 25 years old were involved in fatal accidents and 416,000 more in personal injury accidents, the figures reveal.

Pedestrian experience in 1951 is termed "an island of encouragement in last year's ocean of accidents." A comparison of 1951 with 1950 shows that pedestrian deaths were "held in check" while injuries were reduced by nearly 9,000.

Other facts from "Lucky You":

Saturday was the most dangerous day of the week to drive.

More persons lost their lives during the hour from six to seven p.m. than in any other hour. Injuries hit their peak two hours earlier, from four to five p.m.

Ninety per cent of drivers involved in 1951 accidents were males.

Ninety-seven per cent of drivers involved in 1951 accidents had at least one year of experience behind the wheel.

Thirty-eight per cent of last year's fatal accidents occurred on the open highway.

There were 92 per cent more fatal accidents on icy roads last year than in 1950.

3,420 boys and girls under 15 years old were killed in traffic accidents last year.

There were 162,800 more persons injured in U. S. motor vehicle accidents last year than in 1950.

There were 1,600 more persons killed in U. S. motor vehicle accidents last year than in 1950.

Twenty-five per cent of all drivers involved in fatal automobile accidents in the U. S. last year were under 25 years old.

Last year, 1,962,000 Americans were injured in traffic accidents.

BOOK REVIEWS

Atlas of Peripheral Nerve Injuries. By William R. Lyons, Ph.D., Associate Professor of Anatomy, University of California; and Barnes Woodhall, M.D., Professor of Neurosurgery, Duke Medical School. Pp. 339. Cloth. Price, $16.00. Philadelphia: W. B. Saunders Company, 1949.

This beautifully executed atlas of peripheral nerve injuries, based on experience gained from World War II, should be part of any neurologic or neuropathologic library. The wealth of pathologic material has been thoroughly and carefully worked into a coherent background for the surgical treatment of peripheral nerve lesions. The clarification of terms based on pathologic processes is of especial significance for the surgeon dealing with these injuries. There is an abundant wealth of microphotographic plates illustrating the histology of the various lesions. As a background reference for the understanding of peripheral nerve injuries it is unsurpassed.

Antibiotic Therapy. By Henry Welch, Ph.D. and Charles N. Lewis, M.D. Cloth. Pp. 562. Price, $10.00. Washington, D. C.: The Arundel Press, Inc., 1951.

This is the most up-to-date text book on antibiotic therapy. The entire field of antibiotics is systematically covered. The first nine chapters deal with the discovery, development, antimicrobial spectre, toxicity, absorption and excretion of tyrothricin, penicillin, streptomycin, dihydrostreptomycin, aureomycin, bacitracin, chloramphenicol, and terramycin. There is also a brief discussion of several antibiotics that are not yet commercially available. The next nine chapters outline, in detail, the various bacterial diseases and giving the best clinical uses of each antibiotic, alone or in combination with the sulfa drugs. The dosage regimens best suited for each disease are given. The last two chapters are devoted to Virus and Rickettsial Diseases and Miscellaneous Diseases. Throughout, microbiology and biochemistry are presented as an adjunct to the clinical use of the antibiotics.

A useful bibliography is appended to each chapter and a detailed index makes this voluminous information easily available.

No physician can afford to be without a copy of this volume of Antibiotic Therapy even though he is constantly bombarded with "abstracts" from the various manufacturers on the latest treatment of diseases with their antibiotics.

Biological Antagonism. By Gustav J. Martin, Sc.D., Research Director, The National Drug Company, Philadelphia. Pp. 516. Cloth. Price, $8.50. Philadelphia: The Blakiston Company, 1951.

This is a new book which sets forth the author's theory of biological relativity. In his preface Dr. Martin states: "The purpose motivating the preparation of this summary of knowledge in the field of displacement is a belief that in no single instance of specific displacement has a thorough job been done, and that such work, properly undertaken, will lead to discoveries of chemotherapeutic agents of great value in medical science."

The author reviews biological antagonism as reflected in natural and synthetic displacing agents, covers antagonism as seen in the fields of amino acids, purines, pyrimidines, vitamins, hormones, minerals, and as it forms the basis of immunology, pharmacology, and chemotherapy. Finally, he offers the concept of biological relativity based upon his extensive study of these biological antagonisms.

There are twenty-two chapters in this interesting book which present the fundamentals of a new science. This science is based on the existing knowledge of biochemistry, pharmacology, chemotherapy, immunology, enzymology, general metabolism, bacteriology, and cellular activity in general. Structural formulas are used generously. The chapters on Enzymatic Inhibition by Chemicals Structurally Related to the Natural Subtrate, and Drug Resistance and Bacterial Adaptation will be found exceptionally interesting.

At the end of each chapter a recapitulation summarizes the outstanding theoretical concepts developed upon the material contained in it, and a bibliography follows.

It is apparent that this is a book for the scientist and the investigator who is constantly striving to discover new, non-toxic drugs. However, it is also apparent that the art of medicine is getting away from the art and is getting deeper and deeper into the science, and from that aspect the physician might do well to spend some time initiating himself into the secrets of metabolism of the body cells by reading Biological Antagonism.

Psychosomatic Gynecology: Including Problems of Obstetrical Care. By William S. Kroger, M.D. and S. Charles Freed, M.D. Cloth. Pp. 503. Price, $8.00. Philadelphia: W. B. Saunders Company, 1951.

Perhaps there is no other medical specialty which has more ramifications into the psychiatric field than gynecology and obstetrics. This book treats the female patient as a unit both from the psychic and the somatic aspects. The authors very scholarly integrate the practical aspects of the relationships between physical and emotional processes affecting the female reproductive organs, as well as the reciprocal therapeutic relationships between gynecology, obstetrics and endocrinology on one side and psychiatry on the other.

A complete story is presented of the psychodynamics encountered in the female by stressing the importance of emotional factors in the etiology of female disorders. The entire volume reads like a fascinating mystery story which reveals the innermost secrets of female behavior. It begins with the discussion of the modification of inherited characteristics by fetal environment, goes through the pre- and post-natal periods and all of their ramifications, then the endocrine and menstrual dysfunctions with their psychosomatic manifestations are outlined in detail. Perhaps one of the best sections of the book is Part IV: Common Psychosomatic Problems. In this section the physician will find the practical answers to such important questions as contraception, sterility, frigidity, dyspareunia due to vaginismus, pruritus vulvae, homosexuality, nymphomania, and psychogenic leukorrhea. The last section of this volume takes up effectively the methods of diagnosis and treatment.

Gynecologists, obstetricians and endocrinologists will consider this their book, but general practitioners will find it very valuable in their efforts to understand the female mind and body.

References are given at the end of each section and a complete index adds to the usefulness of this interesting book

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Peptic Ulcer. Published under the auspices of the American Gastroenterological Association. Edited by David J. Sandweiss, M.D. Pp. 790. Cloth. Price, $15.00. Philadelphia: W. B. Saunders Company, 1951.

The American Gastroenterological Association deserves a great deal of credit for sponsoring such an authoritative treatise embodying the best current thought on the diagnosis and treatment on the very important clinical disease of peptic ulcer. Seventy-seven authorities in this field have contributed articles. These contributions have been correlated so that this book presents a unified and complete story of current ideas on the diagnosis and management of all the phases of peptic ulcer.

This is a book greatly needed by the gastroenterologists, surgeons, roentgenologists, internists, and general practitioners. It is divided into eight sections, including the anatomy and physiology of the gastrointestinal tract, the pathogenesis and etiology, the diagnosis and medical treatment of uncomplicated gastroduodenal ulcer, surgical treatment and complications of gastroduodenal ulcer, peptic ulcer of the young and aged, and peptic ulcer other than gastroduodenal.

It is well illustrated with excellent drawings and satisfactory black and white photographs. The style, plus the publisher's good format and good quality paper make reading very pleasant.

References, subject index, and an author index add greatly to the practical value of this book.

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THE GYNECOLOGICAL CARE OF POST-MENOPAUSAL PATIENTS[*]

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The menopause occurs when a patient terminates her last menstrual period. While this time may be difficult to recognize clinically, for practical purposes the history of amenorrhea for six months, at or near the menopausal age, with the development of menopausal symptoms and subsequent local atrophic changes will indicate the post-menopausal era. The types of hazards and the character of symptoms during this era are quite different from those of earlier years. Instead of the complications of pregnancy, the risks of pelvic infection and the development of benign tumors, this age is accompanied by a great increase in constitutional and local changes due to endocrinic alterations that follow the deprivation of ovarian function and by a definite upswing in the incidence of malignant neoplasia. The physician's care, be he gynecologist or general practitioner, during this age consists in general of three functions: the relief of unpleasant symptoms, the treatment of local benign developments, and the early detection of malignancy.

Unpleasant Symptoms. These symptoms may be divided into four large groups those: involving the nervous system, attending psychologic changes, resulting from metabolic alterations and accompanying post-menopausal body changes. The characteristic unpleasant menopausal symptom is that of heat flashes and sweats, which occurs in approximately 95% of the patients. Other complaints consist of cardiac palpitation, headaches, functional gastro-intestinal disturbances, vertigo, tinnitus, paresthesias and insomnia any-one or all of which may occur in the same patient. Psychologic alterations develop in approximately 80% of the individuals and present a variety of manifestations, such as anxiety states, excitability, weeping spells, cancerophobia, and fears of inadequacy — social, physical, or sexual. There also is a frequent inclination to exaggerate the magnitude of problems that, during earlier years of life, would present little or no difficulty. Of the metabolic changes, the most disturbing is the tendency to weight gain, which at times seems to be uncontrollable and within itself produces marked depression and a sense of futility. Other body alterations consist of occasional generalized pruritis, allergic tendencies and the dreaded wrinkles along with the exacerbation of joint changes—if the patient has had prior arthritic difficulties.

The first essential in the relief of the symptoms of neurocirculatory and nervous origin is establishment of proof that they truly are menopausal in origin. Since the age of the menopause varies so widely, the task of its diagnosis is difficult frequently but not impossible. Since 95% of the patients who go through the menopause, experience heat flashes and sweats, the absence of these symptoms should warn against its existence. Indeed, the diagnosis of the menopause should be made only by the exclusion of other conditions and by the exhibition of true menopausal symptoms and physical changes. This diagnosis should not be used as a means of explaining symptoms that might well be, and frequently are, due to psychosomatic difficulties unrelated to failing female endocrinic function. A present day weakness in clinical practice is that of ascribing too many symptoms to the menopause and rushing into hormone therapy prior to the establishment of an accurate diagnosis. This applies to both the management of constitutional symptoms and that of abnormal vaginal bleeding that may accompany the menopausal age. While the use of hormone therapy may be indicated, it should be instituted only after the possi-

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[*] Read before the Medical Society of Delaware, Wilmington, October 10, 1951.

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bility of general medical and psychosomatic difficulties have been disproved and, particularly, only after serious pelvic pathology has been eliminated.

Even then, hormone therapy is not a "must", for many patients will accept a careful and sympathetic explanation of the psychologic changes and the nervous phenomena that attend the menopause along with the explanation that hormone therapy is a means of combating nature's efforts to effect an endocrinal readjustment that must come sooner or later. To administer hormones is simply a device for cushioning the reaction and abundant evidence indicates that such therapy prolongs the period of readjustment. Furthermore, estrogen therapy is likely to give rise to untoward developments, the most important of which is irregular uterine bleeding, the etiology of which must be determined. While this is answered by a diagnostic curettage many times, it is not practical to rush into this procedure immediately. In the management of patients with post-menopausal bleeding, while under estrogen therapy, the first step should be a very thorough pelvic examination, preferably while the patient is bleeding. If the blood is seen to be coming down the cervical canal, if the lower genital tract is clear, and if the internal organs are normal to palpation, the next step is the immediate withdrawal of all estrogenic therapy. This will result in withdrawal bleeding frequently, which may continue for one or two weeks. Persistence of the bleeding longer than two weeks or recurrence of the bleeding during subsequent months in the absence of estrogenic therapy indicates an immediate diagnostic curettage. When curettage is not indicated, it is advisable to urge monthly interviews and examinations for at least six months; otherwise some patients will fail to report what they consider to be unimportant staining. While this policy of delay is recommended in the event of vaginal bleeding during estrogen therapy, it is not recommended in the event of such bleeding in the absence of this therapy. Sixty per cent of the instances of spontaneous post-menopausal bleeding have been proven to be malignant in origin, therefore, its occurrence indicates immediate, careful and complete investigation.

Certain conditions contra-indicate hormone therapy such as the presence of breast adenosis, premenstrual tension, small myomata or endometriosis, previously treated malignancy, or a family history of malignancy. If estrogen therapy is deemed necessary, the oral administration of the natural estrogens is the most practical and satisfactory. This is preferable to the hypodermic administration since it produces a constant level of the hormone in contrast to the peaks that follow hypodermic injections. It is well to insist upon a short period of abstinence, such as three weeks of medication and one week of "vacation". Patients should be urged to restrict the dose to the minimum requirements for relief of symptoms and gradually to dispense with it altogether. Unless this advice is given there is danger of estrogen habituation, just as that from alcohol or tobacco, which may persist for many years after spontaneous readjustment would have occurred under normal circumstances. Other types of hormone treatment namely thyroid, progesterone, or adrogenic therapy have been suggested. In the absence of thyroid deficiency, this medication is not indicated. Progesterone does little or nothing to relieve menopausal symptoms but androgen therapy is effective in a considerable percentage of instances. It must be administered with great care to avoid undesirable side effects and usually is reserved for those patients who present contra-indications to estrogen therapy but demand some type of hormone medication. Finally, the use of small doses of sedatives and antispasmotics, especially at night, frequently will obviate the need for hormone therapy.

The psychologic changes that accompany the menopause are best met by sympathetic understanding and reassurance. Many patients are relieved by the loss of the nuisance of menstruation and the assurance of infertility—but on the other hand—much resentment arises—chiefly against the obvious fact of growing old, with loss of menstruation, tendency to obesity, unpleasant menopausal symptoms, and the fear of inadequacy. Added to this—largely due to modern propaganda—is the fear of cancer that seems to exist, to greater or less degree, in the minds of all post-menopausal women. Immediate reassurance is in order as to all the fears except the latter—

the fear of cancer—which should not be dispelled until the physician by detailed history and complete physical examination including gynecologic examination has assured himself that no detectable cancer exists. Then he is free to reassure his patient. The sense of inadequacy is best handled by sympathetic understanding, explanation, and encouragement. If weight is the problem, dietary and exercise regimens with fluid and salt reduction, are far better than the use of estrogenic pills, anorexic tablets or other hormone injections.

Local Changes. The post-menopausal alterations include atrophic changes in the breasts with a definite increased incidence of malignant neoplasia. Indeed, 45 per cent of the breast cancers appear after the menopause. The pelvic alterations consist of many local evidences of the withdrawal of ovarian secretion. Among these are atrophic changes in the vulvar skin and in the vaginal walls with reversal of the vaginal reaction from acid to alkaline. Local contractures, or conversely great increase in previously existing relaxations of the pelvic floor are common developments. The vulvar atrophy may produce mild pruritis, but intense persistent pruritis vulvae is more likely to result from leucorrheal discharge, glycosuria with mycotic infection, leucoplakic changes, or from local sensitivity to wearing apparel, highly scented soaps or bath salts. This symptom requires careful examination with particular attention to the possibility of leucoplakic changes of the vulvar skin. When, by exclusion, the diagnosis of unexplained pruritis vulvae is made, it usually will respond to warm sitz baths and to the local application of bland ointments. Estrogenic cream has been advised for this symptom and it may be safe if the existence of leucoplakia has been eliminated. The presence of this condition, however, contraindicates estrogenic creams and indicates biopsy.

Post-menopausal vaginal changes predispose to infection with the development of so called atrophic vaginitis. This condition gives rise to a purulent discharge that often is irritating locally and depressing phychologically. The diagnosis of atrophic vaginitis is made by the exclusion of other conditions that might give rise to leucorrheal discharge such as trichomonal or monilial vaginitis, or more serious pathologic changes in the vagina, the cervix or the endometrial cavity. If the vagina presents the typical appearance of atrophic vaginitis, namely moderate redness with numerous petechial areas that ooze on trauma with cotton, the practical procedure is to treat this condition actively; and if the staining does not clear up after ten days or two weeks, a diagnostic curettage is indicated. The treatment of atrophic vaginitis consists of the use of acid douches (lactic acid or vinegar) and the periodic vaginal instillation of estrogenic vaginal suppositories or of an estrogenic vaginal cream. By applying the cream or suppositories locally, effective therapy is instituted without the risk of the untoward results following oral or parenteral estrogen therapy.

Local contractures are especially likely to give rise to distressing local discomfort, plus dyspareunia, in nulliparous patients who were married late in life. A similar situation may arise following extensive plastic repairs that are done shortly before or after the menopause. These symptoms may be relieved by the frequent use of sitz baths, warm douches, and by the local instillation of estrogenic vaginal cream. Occasionally, it is necessary to resort to incision, but this should be avoided, if possible, for the resultant scar is likely to exaggerate rather than to relieve the symptoms. If operation is done, it is well to prepare the patient for surgery by the preoperative use of estogenic cream locally in order to facilitate rapid healing. It also is well to advise local estrogens and resumption of marital relations as soon as the operative area has healed.

Patients who have moderate childbirth relaxation, particularly those with heavy physical duties, often develop increased relaxation following the atrophy that accompanies the menopause, with the appearance of symptoms that require attention. While astringent douches and local tamponade may bring temporary relief, mechanical support is required usually by means of either a vaginal pessary or surgical correction. The use of a pessary is advised when the constitutional condition of the patient prohibits operative intervention. With modern surgical methods, the safety of vaginal repair has reached a point at which it rarely is necessary to condemn a patient to an unhappy pessary life. Here, it is well to point out that the approach to pelvic relaxation, with or without descensus of the uterus, is by way of the vagina and not by way of the abdomen. When a vaginal plastic as done during the post-menopausal age, care must be exercised not to do too much, for the lack of resiliency plus the inevitable scar tissue may result in great unhappiness even though perfect anatomic restoration has been effected.

Following the menopause, the internal pelvic organs—the uterus tubes and ovaries, participate in the general atrophy—the ovaries are no longer palpable, the uterus is greatly reduced in size and usually becomes retroverted. This retroversion is so common as to be a normal finding and it rarely produces symptoms that require attention. The same is true of small myomata that may be discovered after the menopause. If the diagnosis is certain and if the aggregate size is not over 6 to 8 centimeters, the myomatous uterus should be left alone. This is not true of ovarian enlargement, however. Any post-menopausal enlargement or nodularity of an ovary, particularly any recently developed nodularity in Douglas cul-de-sac, requires immediate surgical exploration because of the great likelihood of ovarian malignancy.

Early Detection of Malignancy. The most important, if not the most obvious portion of gynecological care in the post-menopause, is that of the early detection of pelvic malignancy. While the menopause reduces the variety of genital hazards, the risk of carcinoma is enhanced. Table I shows a review of the data accumulated by the Committee for the Study of Pelvic Cancer in Philadelphia, that is so ably chaired by Dr. John Y. Howson. Of 2219 patients with this condition, 60 per cent were post-menopausal.

Table I

Committee for the Study of Pelvic Cancer

Patients with Pelvic Cancer	2219
Post-menopausal Patients	1332 (60%)
Post-menopausal Patients with Delay in Diagnosis	909 (68%)

Nine hundred and nine, (68 per cent) of these patients were the victims of delay in the diagnosis of malignancy for one month or more following the onset of symptoms. The distribution of the malignant lesions is seen in Table II. It is noted that cervical cancer exceeds that of the endometrium by 10 per cent and comprises almost half of the post-menopausal malignancies. Unfortunately, cervical cancer has become known as a disease of the pre-menopause and endometrial cancer as one of the post-menopause. There are no age limits for either of these conditions. Indeed, Palmer[1] in a recent review of 4652 cases of cervical carcinoma, found 22 per cent to be more than fifty years of age In a similar review of 957 cases of endometrial cancer, he[2] found 20 per cent to be less than fifty years old. Symptoms of cervical cancer, usually leucorrhea or staining, after the menopause require complete investigation just as do those of endometrial cancer, usually inter-menstrual bleeding, prior to the menopause.

Table II

Committee for the Study of Pelvic Cancer
Post-Menopausal Patients
Site of the Lesion

	Number	Percentage
Cervix	643	48
Endometrium	500	38
Ovary	121	9
Vulva	50	3.8
Vagina	18	1.2
Total	1332	100

It is also noted that of the 1332 patients all except 121—those with ovarian malignancy—must have experienced some sort of discharge from the genital tract either purulent, purulosanguineous, or actual bleeding. Malignant lesions of the tubular genital tract characteristically cause either discharge, staining, or actual bleeding long before the development of pain. In view of this fact, it seems strange that such a high percentage of these patients either allowed themselves, or were allowed, to procrastinate for more than a month before the presence of malignancy was discovered. Any type of discharge from the genital tract after the menopause indicates immediate investigation. The notion that examination should not be done while bleeding is in evidence is fallacious. Indeed, examination at the time of the bleeding is highly desirable, for frequently it permits prompt identification of the source of the blood and the early institution of treatment.

The vulvar and vaginal malignancies comprise five per cent of the total number. Prognosis for these conditions, which are prone to develop after the menopause, is notoriously poor. A large factor in the poor prognosis is the advancement of the lesion before it is recognized. Another important element is the common association of vaginal carcinoma with malignancy of the upper genital tract. Since ninety per cent of vaginal carcinomas are metastatic in origin, the appearance of such a lesion indicates thorough investigation of the upper genital tract and if this is negative, of the breasts and the entire gastro-intestinal system as well as the urinary tract.

Because sixty eight per cent of these patients were not diagnosed for more than a month, it seems wise to itemize the sites of the disease in relation to the delay. This is done in Table III. The incidence of delay was highest in vulvar carcinoma. Characteristically this lesion occurs in older people, who, despite such symptoms as itching, burning, slight staining, and even the appearance of an ulcer, are loathe to submit to pelvic examination. Another cause of delay is the tendency of some physicians to treat this condition with salves and creams in lieu of a definite diagnosis. The lowest incidence of delay is seen in ovarian malignancy. This is due to the insidious nature of ovarian carcinoma which commonly reaches the inoperable stage prior to the development of symptoms. Since this is the case, some gynecologists have recommended the extirpation of normal ovaries at the time of laparotomy when the patient is past forty years of age. We cannot condone this policy, for we believe that it is better to avoid the surgical menopause by conserving ovarian tissue and by re-examining the patients at regular intervals. By so doing, the very occasional ovarian enlargement may be detected in time for effective treatment.

TABLE III

Committee for the Study of Pelvic Cancer
Post-Menopausal Patients
Delay Versus No Delay in Regard
to Site of the Lesion

Site	Delay	No Delay
Cervix	418 (65%)	225 (35%)
Endometrium	361 (75%)	139 (25%)
Ovary	77 (64%)	44 (36%)
Vulva	41 (82%)	9 (18%)
Vagina	12 (66%)	6 (34%)
Total	909 (68%)	423 (32%)

Little good comes from the presentation of these figures, unless the reasons for the delay are determined. The Committee for the Study of Pelvic Cancer, in analysing the responsibility for the delays, found that 22.4 per cent lay at the doorstep of the physician, 22 per cent were due to combined procrastination on the part of both the physician and the patient, and 55.6 per cent resulted from failure of the patient to report symptoms or from her failure to accept the physician's advice, which usually consisted of hospitalization and further investigation. (Table IV). Indeed, the hospitals are not entirely clear. In 31 of the 909 delay patients, (3½ per cent), a hospital staff member contributed to the delay in diagnosis and treatment. Usually this resulted from diagnostic failure in the Out-patient Clinic or from treatment of a patient for an irrelevant condition without preliminary history and examination to eliminate the possibility of genital malignancy. The reasons for delay in the diagnosis of malignancy are various, both as to the physician and as to the patient. The regular meetings of the Committee for the Study of Pelvic Cancer are attended by the responsible physicians and they have revealed many interesting facts. The problem of the general practitioner is difficult because of the failure of patients to report symptoms or because of their refusal to submit to preliminary examination or to accept the suggestion of further study. On the other

TABLE IV

Committee for the Study of Pelvic Cancer

Delay Physician Alone	204 (22.4%)
Delay Physician and Patient	201 (22.0%)
Delay Patient Alone	504 (55.6%)
Total	909 (100%)

hand, the physicians' delay is due in many instances to his failure to obtain an adequate history or to do a complete physical examination including pelvic examination and digital exploration of the rectum. Finally, misinterpretation of symptoms and unwarranted reassurance by the physician before he has ascertained the origin of symptoms accounts for many delays in the diagnosis of genital malignancy.

The answer to the problem is two fold, namely, a thorough history and adequate examination. A general history with detailed questions as to the genital tract is essential. This should include questions as to recently acquired discomfort or pain in the pelvic area, dysfunction of adjoining organs (the bladder, the rectum, or the anus), the recent development of an area of ulceration, a bump or an enlargement, and finally, the appearance of any type of discharge from the genital tract. Due to the withdrawal of secretive function any discharge from the post-menopausal genital tract is pathologic. While this may result from unimportant developments, such discharge, particularly if bloodstained, should be considered as suggestive of malignancy until careful examination has eliminated its existence. The second half of the answer lies in the regularity and in the thoroughness of the examination. Preventive medicine is on the upswing, as is the concept of the early detection and treatment of malignancy. No more fruitful field of endeavor exists than that in the post-menopausal age of women, in which 60 per cent of the genital malignancies occur. The average length of life of women in 1950 is 68 years, and the mean age of the menopause is 48 years. During the twenty years following the menopause 6 out of 10 malignancies occur in contrast to 4 out of 10 during the preceding 48 years. Because of the tendency of women at this age to procrastinate and even to conceal symptoms the most effective means of both the prevention and the early detection of malignancy is that of regularly spaced and completely detailed histories and routine complete examinations of the entire genital tract including the breasts and the rectum. The present day recommendation is that every woman past 40 years of age should be accorded the benefit of this service every six months. In the past this policy might have been misinterpreted, but the recent tremendous lay propaganda and the widespread acceptance of the cancer detection clinics prove that such a plan will be eagerly accepted by the great majority of intelligent women. By instituting this plan, we physicians will be fulfilling our obligation to our patients in the detection of malignancy either before it gives rise to symptoms or before it has advanced beyond the stage of effective therapy.

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Discussion

Dr. S. W. Rennie (Wilmington): Usually in these meetings there is a paper that is down to earth, and every one gets something out of it. This paper we have just heard I think is in that category.

As Dr. Kern stated not long ago in Philadelphia, not many people, especially women, like to be cataloged as "growing old" so therefore he thought that the science of care of the old is not going to be pushed too hard and not many practitioners are going to take that up. However, every practitioner, whether a general practitioner or specialist, has to recognize certain physiological changes which occur in age, and realize that these are not pathological.

I wish to emphasize Dr. Payne's words about malignancy, a condition which is always to be watched for, certain office procedures, such as the Papanicolaou smear, endometrial biopsy of cervix before it is cauterized, the endometrial biopsy with the small curettment, examination of the breasts, etc., are simple procedures and often reveal pathology.

It is interesting to look back on certain cases and reflect what could have been done to help those women who are in some emotional distress. The psychiatrist perhaps is the final answer to many of these cases, but there are borderline cases in which the emotional unrest can be helped by all of us, especially the gynecologist.

It is unfortunate that sometimes certain gynecologists will examine a woman and tell her there is nothing wrong with her and out she goes. He never takes time to talk to her. A nervous, tired woman comes in with a low hemoglobin; she may have a malignancy.

However, in taking the history of such condition, if it has been of long duration it is probably functional in character, and perhaps the history may elucidate the things that are causing this condition, or the general condition can be worked upon, and many of these women can be helped if the trouble is taken to get a good history. Many women have more trouble in their mind than in the pelvis. A woman who is mentally stable, who has been an insensitive type, may have no difficulty at all with the menopause. On the other hand, all kinds of troubles may arise in the woman who has been more or less depressed—she has been a trying problem to her family, and this type many times develops even an involutional melancholia and all types of distresses which are taken care of by the psychiatrist, if that goes on.

There are many causes which contribute to this. Widowhood, loss of husband's affection, loss of sexual love, loss of feeling that she is needed around the house, insecurity, and so on, that she believes is developing in her mind. The types of symptoms which do occur are many. Also, I might say, sometimes the loss of a uterus. For instance, the patient is operated upon, perhaps for a benign tumor. But if this woman can be talked to before and have explained to her what the condition is, and what her outcome is going to be, I believe many of the psychic distresses and emotional unrests which frequently occur after the hysterectomy can be avoided.

We often see cases with diarrhea, for instance, rigidity, vomiting, gastric upsets — all perhaps brought on by reason of an emotional background, which is menopausal in that particular patient. Pathological changes are not too difficult to determine if a good examination is done. But the neuroses are terrific and difficult at times, and it is among these menopausal patients that most of these conditions are found.

So I must say, do not rely entirely upon hypodermic estrogenic therapy to relieve these patients, because it won't do it. To correct these symptoms I think it is necessary to sit down and talk to these patients, and if you allow them to talk they will really tell you what is wrong with them. And, emphasizing Dr. Payne's remarks on malignancy, a thorough checkup, pelvically, rectally, and the breasts, is indicated as a routine procedure at the office, and I believe a great many of our pathological conditions will be detected. On the other hand, we do find certain emotional conditions that I think are very difficult to undertake.

Dr. A. H. Seegar (Wilmington): Dr. Payne has stressed the frequency of carcinoma in the post-menopausal woman and the delay by the patient and the physician in the diagnosis and treatment of the condition and we must keep trying to prevent these costly delays by education of the public to symptoms and to routine examinations and the education of the physician to doing pelvic examinations to make an early diagnosis.

However, what has interested me even more is trying for something even better than this; that is for segregating out those people who are most apt to develop pelvic cancer even before this cancer occurs.

Dr. Payne pointed out that 95% of women have hot flushes at the time of the menopause, but what of the other 5%? Those are the women who maintain high estrogen levels through and after the menopause. These women with a late menopause, the bloody menopause without hot flushes, with little or no pelvic organ atrophy after the menopause, are the ones who should be watched with the greatest care for corpus cancer, for it is in this group that the bulk of the corpus cancer is noted.

Clyde Randall once said that he had never seen a case of corpus carcinoma in a woman with marked vaginal atrophy, in a woman whose vagina stained poorly with Lugol's solution. There may be some such cases but they are relatively rare. These women, then, should be watched very closely for corpus cancer.

In cancer of the cervix, the job is somewhat easier. If non-invasive cancer of the cervix is present for 6-12 years before invasive cancer develops, then routine office biopsy of the apparently normal cervix should assure diagnosis at a time when the cure rate is 100%. Such diagnosis is far preferable to waiting until cancer occurs. Gusberg has shown that such routine biopsy yields 2% cancer in situ of the apparently normal cervix.

Dr. J. W. Barnhart (Wilmington): I just wanted to ask a couple of questions of Dr. Payne. Many of us practicing medicine have done only general physicals, including pelvics, which I think should be done, but in all our examinations I have often wondered if we are doing an adequate examination, and doing right by our patients.

The question is, with the practicing physician in the office: is endometrial biopsy a justified procedure? I have often felt it is a kind of meddlesome type of surgery. And as to curettage, I feel that if there is need for curettage that it should be a thorough curettage, not an office curettage.

Another thing, in passing—on the presence or absence of pelvic malignancy in general medicine, with the difficulty of the Papanicolau stain, is routine stain his regular procedure? And I have often wondered if it is justifiable to charge the patient five dollars for this added study? I would like to know Dr. Payne's impression on these two studies.

Dr. Payne: To answer the two important questions asked by Dr. Barnhart:

No. 1, as to endometrial biopsy. I do endometrial biopsies in my office very frequently, but I do them for the sole purpose of studying the physiology of the endometrium in premenopausal women. After the menopause, such a procedure would be an extremely dangerous one, and, furthermore, any attempt to rule out the presence of endometrial malignancy by endometrial biopsy will fail in the vast majority of instances, for the reason that the likelihood is that you don't get the entire lining of the uterus.

The only way to be sure the patient doesn't have endometrial cancer is to put her to sleep in the hospital, scrape inside of the uterus as thoroughly as you possibly can; not by an office curettage or office endometrial biopsy.

As to the Papanicolaou stain: I wish I trusted the results of that stain or smear as much as some of my friends do. I wouldn't have to work nearly as hard. I am quite certain, though, that if my wife had spotting after menopause, I would not depend on Papanicolaou stains. There have been too many false positives and too many false negatives. It may be all right for a routine use, as with cancer detection clinics, who are seeing thousands and thousands of patients, but when you come down to the actual question: Does this patient have endometrial malignancy?—scrape the inside of the uterus and send the sample to a good laboratory. Then you know.

Dr. Rennie feels just as I do about the management of patients at this age. I did general practice for eight years before I limited my work. It was the best eight years I ever spent, and I am quite certain that I am a better doctor for it. I appreciate the problems with which the general practitioner is confronted, but I do believe now, in contrast with twenty years ago, it is easier for the general practitioner to persuade patients to submit to regularly-spaced gynecological examinations.

Therefore, I think that it is our job, if they do object to these things, to educate them to the point at which they will accept such examinations so that we can pick up any genital malignancy, including the breasts, before it is advanced to the point at which we can do nothing therapeutically.

POTENTIAL DANGERS FROM INCOMPLETE EXAMINATION OF THE PREGNANT WOMAN*

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The steady decline in maternal mortality from 58 per 10,000 live births in 1935 to 12 in 1948 is in part the result of the recognition of the value of careful prenatal supervision. In addition to the decrease in mortality the number of women incapacitated as a result of pregnancy, although not statistically obvious, is substantially less. Supervision during the prenatal period constitutes only a part of total obstetric care and in itself may be less important in the prevention of death than care during labor and delivery. Careful evaluation of the prenatal patient will however indicate those in whom an abnormality is present or may subsequently develop and thoughtful management during the pregnancy will aid in detecting complications at their onset. A program aimed at the recognition of any condition which may interfere with the normal course of pregnancy or which may make pregnancy dangerous for the patient will aid in reducing death and disability. Ideally such a program should include complete pre-pregnancy evaluation of the prospective mother since in certain instances conditions which either temporarily or permanently contraindicate pregnancy may be present. Discovery at this period may permit their correction after which pregnancy may be safer for both mother and infant.

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*Read before the Medical Society of Delaware, Wilmington, October 10, 1951.

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Evaluation of the pre-pregnant or prenatal patient must include 1) a complete systemic history and physical examination, 2) a pelvic examination including visualization of the cervix through a vaginal speculum, 3) internal manual evaluation of pelvic size, 4) a miniature chest film or at least fluoroscopy, 5) examination of the urine for protein and sugar, 6) determination of the hemoglobin or hematocrit, 7) determination of the blood Wassermann reaction and 8) determination of the Rh factor. This routine is possible in any physician's office and if it is systematically carried out on each patient few pathologic conditions will be overlooked. It is not uncommon that "prenatal care" is administered for several weeks or even months to women who are not pregnant. Although amenorrhea is characteristic an accurate diagnosis of pregnancy cannot be made without complete pelvic examination. Should there be a question as to the presence of a pregnancy at the initial visit repeat pelvic examination in two or three weeks usually will reveal the true state of affairs. If the uterus has softened and increased in size during the interval it is likely the result of a pregnancy, whereas if it is unchanged one should be suspicious that the amenorrhea is on some other basis. Biologic tests are expensive, not always accurate and may be confusing rather than helpful. Until it is definitely proven that a pregnancy exists one should not launch the patient upon the course of prenatal care.

Certain medical conditions may be so early or so mild that they do not affect the normal activities of the nonpregnant woman; pregnancy however may increase their severity or the normal changes associated with gestation may influence their course. In most instances such lesions are detectable by complete history and careful examination.

In most large obstetric clinics reduction in deaths from hemorrhage and infection has increased the importance of *cardiac disease* as a cause of maternal mortality. That these deaths can be substantially reduced by careful prenatal supervision is proven beyond doubt; this can however be accomplished only if the lesion is recognized. The normal physiologic changes associated with pregnancy add to the cardiac load and may increase symptoms which have been minimal in the nonpregnant state or may precipitate them in women who have been asymptomatic and unaware of cardiac pathology. Such changes include increases in plasma volume which may average 20-25 percent at its peak late in pregnancy, in size of the vascular tree, in cardiac output and in general metabolism. If cardiac disease is detected early a planned regimen of supervised rest, protection from infection, pre-delivery hospitalization and digitalization when indicated will reduce both maternal and fetal mortality. In addition therapy which may be contraindicated for the cardiac patient can be avoided as is illustrated in the following case report:

L. F., age 32, white, Para ii, Gravida iv, was first examined at the eighth week of her fourth pregnancy. The past history revealed no symptoms suggesting a cardiac lesion or a previous rheumatic infection. Two earlier pregnancies had terminated normally and one by abortion. A harsh cardiac murmur was described but a diagnosis of heart disease was not made. At the 20th week of pregnancy the patient was admitted to the hospital with a severe pyelonephritis which had been present for 5 days. Because of dehydration 10% glucose was administered rather rapidly intravenously. After 1500 cc. of fluid had been given she developed cyanosis, dyspnea and pulmonary edema. The cardiac decompensation was treated and the patient ultimately was delivered at term after spending the rest of the pregnancy at almost complete bed rest.

Pulmonary tuberculosis may be present in a stage so early that the lesion is undetectable by physical examination alone. If chest x-rays are taken of every prenatal patient a number who have early infections not clinically obvious will be found. The mortality rate from pulmonary tuberculosis first discovered after a pregnancy is high because the lesions often are advanced. If proper therapy is initiated early the maternal mortality will be reduced and contact infection of the newly born infant may be prevented.

Essential hypertension complicated by pregnancy may be responsible for maternal death from abruptio placenta, cerebral hemorrhage and superimposed pregnancy toxemia. In those with signs of vascular degeneration in the retinal vessels reduced renal function and blood pressures above 200 110 the risk from pregnancy is so great that early interruption must be considered. The lesser degrees of hypertension are not necessarily incompatible with pregnancy but suggest that hospitalization and thorough evaluation of the patient is necessary. Such evaluation should include general physical examination, eye ground studies, urine examination, urine concentration and urea clearance tests, determination of the blood urea nitrogen level and multiple blood pressure recordings. Should these studies reveal no remarkable deviation from the normal pregnancy may be allowed to continue but supervision must be careful. Since serious complications occur so frequently mere recognition of hypertension is insufficient, rather a careful prenatal program including frequent visits, weight control and rest should be planned and discussed with the patient. Here again by pre-pregnancy evaluation those whose vascular system is so damaged that pregnancy is contraindicated could be detected. This point is illustrated in the following case history:

E. W., white, Gravida i, Age: 32, had been married 5 years without conceiving. Complete infertility studies revealed a low basal metabolic rate in the patient and reduced sperm count in the husband. After therapy the patient became pregnant and only then was severe hypertension discovered. The patient was then referred to us for evaluation and treatment. The blood pressures in the hospital averaged 210/105, examination of the ocular fundi revealed organic changes in the vessels compatible with long standing hypertension and orthodiagram showed moderate cardiac enlargement. It was our opinion that continuation of the pregnancy would subject the patient to an undue risk and termination was advised.

Diabetes mellitus may first be recognized during pregnancy and is to be suspected if sugar is found in the urine. The fetal mortality associated with untreated diabetes may be as high as 50-60 percent; both this and the increased maternal mortality can be substantially reduced by careful management. The presence of reducing substances in the urine is not uncommon during pregnancy and may represent lactose which is produced normally by the mammary glands during pregnancy and is of no consequence. While glycosuria can occur in the normal individual due to the physiologic depression of the renal threshold for glucose it may also indicate diabetes. The latter can only be eliminated by a glucose tolerance test which is indicated in every patient in whom a positive urine test for sugar is detected. The history may be suggestive in that large babies are characteristic of diabetes or the prediabetic state; although all women who have had infants weighing 9-10 pounds do not have diabetes such a history indicates the need for careful investigation.

Anemia during pregnancy is common but all patients in whom the hemoglobin reading is reduced are not necessarily abnormal. The physiologic increase in plasma volume dilutes the blood sufficiently to lower both the red cell count and the hemoglobin although the total amounts of these blood elements actually are increased. Thus the lower normal limit of the hemoglobin reading during pregnancy is 10 grams, far below that for the nonpregnant woman. Correction of true anemia is important because a patient whose count is low can die as the result of hemorrhage which might not have affected her had the blood been normal. A blood count during each trimester of pregnancy, the last one within a month of term, will indicate those who require therapy. Iron preparations are less effective in the pregnant than the nonpregnant woman hence transfusion is more often necessary. If the hemoglobin falls below 10 grams and does not respond to iron therapy, transfusion must be considered. In most instances blood should be administered without preliminary iron treatment if the hemoglobin is less than 9 grams. The results of prepregnancy detection and treatment of anemia are far superior to those from therapy arising during the gestation period.

Rh negative women may have become sensitized during a previous pregnancy or from transfusion with Rh positive blood. Erythroblastosis in the infant will result from such sensitivity and since there is no preventive treatment for this condition preparations must be made for treatment of the infant.

Immediate postdelivery transfusion of the baby offers the main hope for survival but unfortunately is not always successful. All Rh negative pregnant women should have the antibody titer determined during pregnancy in a reliable laboratory since this will indicate those whose infants may be affected. Here again pre-pregnancy titer determination will indicate those who have been sensitized and in these pregnancy should be postponed.

Syphilis has little affect upon pregnancy as far as the mother is concerned but it may be lethal for the fetus. If syphilis is diagnosed and properly treated prior to the middle of pregnancy the fetus is protected in almost every instance. Blood for serologic test should be drawn at the first prenatal visit and treatment initiated at once should the infection be present. Penicillin administered late in pregnancy will arrest the disease in the fetus but, of course, will not correct damage already done. Treatment, therefore, must be started whenever the diagnosis is made regardless of the stage of the gestation.

In addition to the medical complications discussed above there are other more localized conditions which may interfere with normal pregnancy or delivery. **Contracted pelvis** has little or no effect upon the course of the pregnancy before the onset of labor, however in order to anticipate the type of delivery prenatal evaluation of pelvic size and shape is important. At the time of the initial pelvic examination internal measurements which include an estimation of the diagonal conjugate, palpation of the lateral pelvis at the inlet, estimation of the length of the ischial spines and the slope of the side walls are taken. The classical external measurements of the bony pelvis are no longer taken in our clinic or practice since they are almost valueless in estimating the size of the pelvic cavity through which the baby must pass. The outlet often is neglected although its adequacy is of utmost importance for the vaginal termination of labor. If late in labor the outlet is found to be too small to permit delivery the infant may be lost, whereas if a small outlet is recognized before the onset of labor this catastrophe may be prevented. Measurements of the outlet include an estimation of the pubic angle which should be greater than 85-90° or sufficiently wide to permit the insertion and slight separation of 2 fingers, measurement of the distance between the ischial tuberosities and palpation of the lower sacrum and coccyx. "Resistant" perineal soft tissue offers little difficulty since it can be incised.

X-ray pelvimetry offers little for the ordinary obstetric patient but can be of great importance if the pelvis is abnormal, the fetal size excessive or the presentation unusual. Preliminary manual measurement of all pelves will indicate those in which a more precise evaluation is indicated. If x-ray pelvimetry is necessary the time at which it will give the most information is during labor since then the relationship between the size and position of the presenting part and the pelvis can be determined. X-rays taken early in pregnancy are of little value during labor since they give no indication of the size of the infant which must pass through the pelvis.

Ovarian neoplasms are not frequently encountered in pregnant women but should such a tumor be present it may prevent vaginal delivery. These tumors may be detected at the initial examination and should be removed at about the 14-16 week of pregnancy. Removal at this time is indicated in order that an exact diagnosis may be made, to prevent twisting and necrosis during pregnancy and to prevent obstruction of the pelvic inlet. Deliberate selection of cesarean section and cystectomy at term as a method of treating a neoplasm diagnosed early in pregnancy is unwarranted since an unnecessary cesarean section will be performed leaving a scar in the uterus, thereby subjecting the patient to the danger of rupture in subsequent pregnancies. On the other hand failure to examine the patient and to detect a tumor blocking the pelvis prior to the onset of labor makes such a procedure mandatory. Unrecognized ovarian cysts may, after the uterus empties itself, undergo torsion on the pedicle and necrosis making an emergency operative procedure during the puerperium necessary.

Cancer of the breast, uterine cervix or other organs is not common but if unrecognized may grow rapidly under the stimulus of the pregnancy. Complete physical and pelvic examination will indicate those patients in whom there are suspicious lesions; the diagnosis may then be confirmed or excluded by suitable biopsy and tissue study.

SUMMARY

Every physician who assumes the responsibility for the care of pregnant women should be prepared to offer her all the refinements of obstetric care. The main concern of the physician must be to reduce maternal and fetal mortality to an absolute minimum and to return the mothers to as near the normal pre-pregnant state as is possible. Many conditions which can complicate and increase the hazard of pregnancy may be present without the patient's knowledge. Ideally every woman contemplating pregnancy should consult her physician for a complete pre-pregnancy checkup at which time minor abnormalities could be corrected, and any condition contra-indicating pregnancy could be detected. Unfortunately many patients are educated beyond their doctors because those who seek such evaluation often are given a cursory examination or none at all only to find after becoming pregnant that a chronic condition now is considered to be a serious complication. A second choice, and at this time the more common, is complete evaluation as early in the pregnancy as is feasible. A careful initial examination is complemented by subsequent investigation which may become necessary to evaluate new symptoms or to follow up suspicious conditions previously noted. It is only by a carefully planned course of prenatal observation and treatment that patients can be brought to delivery in the best possible condition. Such supervision may play an important part in reducing maternal and fetal mortality.

3400 N. Broad Street

PRESIDENT WAGNER: The subject is now open for discussion.

DISCUSSION

DR. G. H. H. GARRISON (Wilmington): This has been an excellent paper and of the type that we need more of. To every one that handles maternity cases, this paper is full of valuable advice.

In the cardiacs, which should be picked up either by history or certainly by physical examination at the time of prenatal examination, we in this area believe that they should be completely worked up and studied by a cardiologist. It is from the cardiologist's report and frequent consultation that we guide our obstetrical care.

Tuberculosis in pregnancy is indeed a problem, especially in those cases that report late for their initial visit, or the early case in which the patient is advised to have a therapeutic abortion, yet demands to continue her pregnancy.

Essential hypertension in pregnancy is summed up by Chesley's paper in the American Journal of March 1947, in which he studied 301 pregnancies, with 218 hypertensions. He found the gross fetal loss to be approximately 35%; the maternal mortality about 2%, which at that time was 20 times that of the hospital experience at large.

Among the one-third of the hypertensives who developed superimposed toxemia in pregnancy, and about a third did, the maternal mortality was 12.2% and a fetal loss of about 50 per cent, or about three times that of the hypertensive who had escaped superimposed toxemia. Therefore, pregnancy in a hypertensive and superimposed toxemia should not be allowed to persist, in consideration of either the mother or baby, because it is not only futile, but the second thing is, you lose more mothers than babies by doing it.

Now, in regard to the anemia in pregnancy, it is of interest that if repeated blood cell counts are done, there is a relative decrease in both of them at about the third and eighth month of gestation. The eighth month dip is easily understandable because at this time the blood reaches its maximal dilution as a result of the increase of plasma. Why the third month dip, I do not know.

I would like to ask the essayist how much attention he pays to the Rh titre in the mother, the initial titre, or if the titre increases, when does he elect or determine to terminate the pregnancy?

I heartily agree that the clinical external pelvic measurements are practically valueless. The chief use, if it can be called a use, is that of using the big shiney pelvimeter and hollering numbers to the office nurse. Briefly, you can't tell the diameter of a house by measuring the outside walls.

The psychosomatic nature of the mother during pregnancy is important, and it is only through a sympathetic attempt to explain in a logical manner what could be causing her various symptoms that this type of trend can be countered.

Dr. Andrew M. Gehret (Wilmington): I understood the doctor to say that he treats luetics early in pregnancy, and previous to placentation, that is, formation of the placenta. It was my impression that best results were obtained after the formation of the placenta.

Then, too, I would like to ask whether he still thinks it necessary to re-treat pregnant women who previously had had syphilis but now are considered to be cured?

Dr. Willson: I thank the discussants for the points they added.

Certainly the psychosomatics of obstetrics involves more than twenty minutes. It is a highly important aspect of prenatal care which I chose to eliminate, not because I don't think it is important, but simply because there was not enough time to get involved in it.

As to the Rh titers, I am not sure exactly what increasing titer means, principally because the determination of Rh titer is relatively inaccurate. I don't believe we can draw too many conclusions from the Rh titer, we'll say. We don't terminate pregnancy on the basis of titer, and in these patients now our general tendency is to let them go to term and deliver normally, and then to be prepared for immediate transfusion of the baby. The baby's blood count is checked, and if it is normal or if it is high, then the transfusion is delayed temporarily. But the baby is watched constantly, repeated blood counts are checked every few hours, and if it continues to drop, the baby is then transfused.

One of the serious problems of the Rh and titer is the fact that they are exceedingly difficult and that if they are not run in the proper manner they are all wrong. There was a recent evaluation of Rh titers in various laboratories over the country, and from one laboratory a report was returned of no agglutination, in some sheep's blood that was sent to the laboratory. Of course, if they are really titered properly they would get a positive for the patient. So, as far as the Rh titer is concerned, I am not sure that repeated titers are necessary. I think every patient ought to have at least one, so that you can be prepared, and I think that one ought to be during the last trimester of pregnancy to be properly evaluated.

As far as the treatment of lues is concerned, presumably if a Herxheimer reaction occurs with the treatment of lues, the placenta may separate. There have been cases reported of placental separation with the use of penicillin in the treatment of lues in pregnancy. We have, however, treated the patient as soon as the condition was diagnosed, and so far have had no difficulty with the placenta. There can, however, be little harm in waiting until placentation has occurred, perhaps 14 or 15 weeks, because in the classic studies of lues during pregnancy those patients in whom treatment was started before the twentieth week of pregnancy, the infection of the fetus was prevented in almost every instance. That, of course was done with bismuth and so on. I think it would be safer to delay that therapy.

We have in the past also re-treated all patients who have had lues, even though there was no sign of infection, and even those that have negative serology. However, there is a mass of evidence that must amount to at least a thousand patients who have been delivered without re-treatment. That is, patients are treated with penicillin who have been delivered without re-treatment, and have been free from lues. So I would think if the patient has been adequately treated with penicillin, and if she has a negative serology, that re-treatment is not necessary.

THE IMPORTANCE OF EARLY DIAGNOSIS OF BREAST CANCER*

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That early diagnosis is the most important factor determining the curability of breast cancer is universally accepted. Breast cancer is the commonest cancer affecting women. It accounts for one-fifth of the cancer deaths in this sex. It occurs in an organ easily accessible for examination, and one which lends itself to wide surgical removal together with its regional lymph nodes. Why then should so many deaths be due to cancer arising in the breast? Obviously, the diagnosis is not being made in the early, curable stage of the disease.

By definition, the early cancer is small, limited in extent, and without distant metastasis. The time factor from onset to treatment is important, but does not tell the whole story. One cancer may grow and spread very slowly, and be curable months or years after onset, while another of rapid growth may be incurable within a few weeks. Rarely, multicentric origin occurs: this is a bad prognostic sign. Pain is usually absent in the breast cancer (a frequent excuse to postpone examination on the patient's part); when present it indicates rapid growth and a serious prognosis.

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*Read at St. Francis Hospital Staff Meeting, January 22, 1952.

**Chief, Neoplastic Diseases, St. Francis Hospital.

The size of the primary tumor is also an indication of the stage of the disease. Several years ago Lewis and Geschickter, in a review of the Johns Hopkins Hospital cases, found that most of the long term cures result when the primary tumor is not over 2.5 cm. in diameter (as measured by the pathologist, since to palpation the mass is always magnified in size by overlying breast tissue and fat). A similar relationship between the size of the tumor and long term survival can be shown in the series reported below.

The presence or absence of axillary node metastasis is also important in estimating the stage of the disease and its curability. The truly early cancer has not metastasized to the axilla and the prospect of cure is good (75-80% in most reports). The presence of one or two small metastatic nodes in the axillary base immediately changes the picture, and when extensive axillary node involvement is present only a few cures can be expected by the most radical surgery, since unrecognized distant metastasis is probably also present.

Such obviously unfavorable clinical signs such as extensive lymphedema of the breast, cutaneous cancer nodules, metastatic nodes above the clavicle or in the opposite axilla, edema of the arm, or distant skeletal or visceral metastasis do not come within the scope of a paper on early diagnosis. The majority of such cases should be classified as advanced, inoperable, suitable for palliative therapy only. Nor is this the place to discuss the treatment of recurrent or metastatic carcinoma, for which much may be done by radiation therapy, hormones and perhaps chemotherapy to alleviate symptoms and prolong life in comfort.

Early diagnosis of breast cancer depends on two individuals: the patient, and the physician first consulted. It is my impression that patients today are much more alert in detecting abnormalities of the breast, much readier to seek medical advice, and much more insistent on adequate, thorough examination. It is also my impression that physicians are much more careful in their diagnostic examinations, much readier to entertain the diagnosis of cancer, and more willing to get consulting advice in doubtful or difficult cases. However, the chief causes for delay in diagnosis remain. Most often, the patient is singularly indifferent to changes in her own breast; how can we explain otherwise the large breast mass discovered just a week or two before consultation? or she may be aware of a mass, but avoid consultation out of fear. I believe delay on the patient's part has been reduced considerably by the educational programs of the Public Health Service, the insurance companies, and particularly the American Cancer Society. There remain many women who are not reached in this manner, hence I believe the physician should instruct his patients in self-examination of the breast. Her job, of course is not self-diagnosis, but the discovery of either breast deformity or breast mass, for which she must consult her physician.

In general, the practicing physicians today are keenly aware of the possibility of breast cancer and the importance of early diagnosis. The old advice "if it doesn't bother you, don't bother it" no doubt was conditioned by many doctors' conviction that surgery disseminates breast cancer, as it does if the advanced, hopeless lesion is subjected to surgery. Under present conditions, when surgical cure of the early breast cancer is a commonplace, when even elderly patients can safely be subjected to operation, such advice is rarely heard. Occasionally, the age of the patient delays diagnosis, as in one of the cases reported — a twenty-four year old woman consulted four surgically trained physicians over a three month period before a diagnosis of breast cancer was made and radical mastectomy performed. Another medical error sometimes made is inadequate biopsy: the tissue removed does not contain the cancer, the patient is reassured, and the cancer grows steadily adjacent to the biopsy scar. I have seen at least six such cases, and only one survived five years. In one case, a submammary incision was used to reach an upper quadrant tumor in a large breast. Finally, the initial surgical treatment may be inadequate or improper. For example, preliminary biopsy followed by radical mastectomy without closure of the original incision and without change of drapes, gowns, gloves and instruments may implant cancer cells in the new incision.

Review of Cases

In preparing this report the author reviewed all his personal cases, as well as those service cases performed by surgical residents under his direct supervision. The cases were analyzed with respect to duration, size of primary tumor, presence (and extent) of axillary node metastasis, and survival. Operable cases only were considered, since we are here concerned with early cancer. A much larger group of advanced, primarily inoperable breast cancer and of locally recurrent or metastatic cancer was not considered. For the years 1937 through 1946 the cases are classified as failures (died, or living with recurrent disease) and successes (living and well for the period of observation). Deaths after the five or ten year period, if due to cancer, were considered failures; if not due to cancer were subtracted only in the survival period in which death occurred. No cases were lost from observation.

Table I

Results of Mastectomy for Cancer

		Failures		Successes	
Year	Total Cases	5 Yrs.	10 Yrs.	5 Yrs.	10 Yrs.
1937-41	4	0	0	4	4
1942-46	28	8	2	18	
All Cases					
Followed	32	10		22 (70%)	
5-10 Years					
1947-51	70	15 (to date)			
Total Mastectomies	112				

Of the ten failures among those followed at least five years, the average duration of the tumor was ten months (1—24 months, 5 more than 12 months), the size of the tumor was 1.0 to 2.5 cm. in 3, 2.5-5.0 cm. in 3, over 5.0 cm. in 2, and 2 patients had double primary cancers. Axillary metastasis was present in 9 of the 10 patients. Two failures died from senility one and five years after operation without apparent recurrence. One failure refused general anesthesia and had only a simple mastectomy for a small tumor; though her nodes were not then palpable she had axillary node recurrence and died of cancer. Three failures lived or are living with metastatic disease more than five years after operation.

Of the 22 successful cases the average duration of tumor was 4 months (0—12 months, 8 one month or less), the size of the tumor was less than 2.5 cm. in 17, from 2.5-5.0 cm. in 4 cases. Axillary metastasis were absent in 14, present in 7, uncertain in 1. One 7 year survivor was omitted from the calculation of tumor size and duration: she had a slowly growing gelatinous adenocarcinoma of 7 to 15 years duration which reached a size of 12 x 7.5 x 6 cm. without metastasizing. One 7 year survivor delayed operation 10 months and 2 years later had a normal term pregnancy. Four recent cases have also become pregnant.

The more recent series, the end results of which are not yet apparent, already shows 15 failures, all but one of which had positive axillary nodes, all but 2 of which had tumors larger than 2.5 cm. However, 4 patients gave a month's history of tumor, 4 others less than 6 months, none over a year, except one who had a breast mass 16 years! The short history must mean that these patients had tumors of very rapid growth, or failed to notice tumors of long standing.

A palpable mass is the single most important sign of breast cancer. This is usually sharply defined, but may be obscured by a large amount of breast tissue. Very small cancers may be mobile and simulate adenofibroma; hence all tumors of the breast should be excised for diagnosis. So-called chronic mastitis is sometimes difficult to differentiate; when the mass seems to be a plaque of mastitis this diagnosis should be deferred until re-examination after the onset of the menstrual period confirms its cyclic involution. Cysts of the breast under tension, particularly when imbedded in mastitis, sometimes simulate solid tumors. Here aspiration is of value. If the mass *completely disappears* after aspiration of clear, opalescent, or milky fluid, it may be considered a cyst, but re-examination after a month or two is always advisable. Should *bloody* fluid be obtained, the possible presence of cancer must be ruled out by surgical biopsy.

Deformity of the breast or nipple is the second important diagnostic sign. Sometimes the cancerous breast is larger or more prominent than its fellow. More often there is elevation of the breast, deviation of the nipple, or retraction of the nipple *toward* the tumor. This is best recognized with the patient sitting in a good light with both breasts exposed. Elevation of the arms, pressure on the hips with arms akimbo, or forward bending with arms elevated, frequently exaggerates the deformity, which may be no more than slight flattening of the breast adjacent to the cancer. Whenever deformity of breast or nipple is associated with a mass, cancer is the most likely diagnosis. Dimpling of the skin over a cancer is not always apparent unless the skin is fixed with the fingers of one hand and the tumor displaced with the other, and is best seen with oblique illumination.

Bleeding or brownish discharge from the nipple is due to cancer in about 25% of cases. Most commonly, a lacteal duct papilloma is the cause. Papillomas, of course, should be excised as a possible precancerous lesion. Often they are difficult to palpate and are most easily located by inserting a lacrimal duct probe into the bleeding duct and excising the probe.

Axillary lymph node enlargement is of prognostic importance, but its absence should not influence us in the diagnosis of early breast cancer. By definition, the early cancer should not have spread to the nodes. Likewise, such signs as edema of the breast, fixation or umbilication of the nipple, and ulceration are signs of advanced cancer.

Summary

A series of personally treated cases of operable breast cancer is reported. The series is analyzed with respect to size of tumor, duration, and incidence of axillary metastasis to emphasize the importance of early diagnosis with respect to successful surgical treatment. A few unusual cases are mentioned.

1100 N. Jackson Street

THE EARLY CLINICAL DIAGNOSIS OF CARCINOMA OF THE CERVIX[*]

Isadore Slovin, M. D.,[**]
Wilmington, Del.

The wording of my subject this evening, the early "clinical" diagnosis of carcinoma of the cervix, makes it possible for me to impress upon you what I think is the most important part of this paper: that when a diagnosis of carcinoma of the cervix is possible on clinical grounds, it is never "early." The diagnosis of early carcinoma of the cervix is based purely upon laboratory methods. A high index of "cancer suspicion" will lead us to seek these examinations as early in the disease as possible.

The importance of seeing malignancy early cannot be overstressed. Our great hope for salvage of cancer victims today lies predominately in favor of early diagnosis. No matter how refined our present armamentarium of treatment may be, the finding of a cancer in its early stages will outmatch the great ingenuity of therapy. Truly, an ounce of prevention will outweigh many pounds of cure!

With respect to carcinoma of the cervix uteri, we have been accustomed to classify these malignancies as outlined by the League of Nations. Class 1 (or Stage 1) League of Nations implies an early lesion, limited to the portio of the cervix — definitely an early lesion. Yet 20% of such cases die from pelvic carcinoma. That is to say that even at the time when carcinoma is apparently limited to the cervix, 20% have pelvic lymphatic involvement. In such cases we should therefore expect at least 80% cure with proper treatment. In order to expect a greater percentage of cures our efforts must be directed primarily to earlier diagnosis, with no delay in treatment. Our aim must be to treat carcinoma before it has invaded the basement membrane (carcinoma in situ). In this way only can we expect to obtain the most nearly perfect cure rate, at least until more effective methods of treatment are established.

It behooves us to have a high index of "cancer suspicion" and to set high standards in choosing cases for study, such as:

1. Frequent and periodic speculum examina-

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[*] Read at St. Francis Hospital Staff Meeting, January 22, 1952.

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tion on all women, particularly those that have had a pregnancy.

2. All patients with excessive bleeding, contact bleeding, or unexplained discharge should be examined with a speculum immediately.
3. All cervices showing ulceration, granulation or hypertrophy in the mucosal epithelium should be biopsied.
4. A Papanicolaou smear should be taken on all cases examined which show a normal cervix grossly.

Methods of Diagnosis

1. **Papanicolaou Smear.** After exposing the cervix and posterior vaginal fornix by means of a speculum, a smear specimen is taken from the posterior fornix and endocervical canal. This is best done by means of an Ayre's applicator or by a split tongue depressor. An effort is made to scrape some of the cells from the complete circumference of the squamo-columnar junction of the cervix, since it is in this area that the great majority of carcinomas begin.

The specimen is then fixed while wet by immersing it in a solution of equal parts of ether and 95% alcohol. After fixing, it is ready for staining by the method as outlined by Papanicolaou and Schorr.

Vaginal cytological examination has drawn us a step closer to perfection in the early diagnosis of carcinoma of the uterus. Its great value lies in its applicability as a screening process in cases which exhibit no gross lesion and no symptoms or signs. It should not be depended upon to replace the study of tissue taken by biopsy. Unless this fact is realized many tragic mistakes will be made. Have we not already seen the case of the cervical ulcer upon which a smear was done with a negative report, only to result in a far advanced case after six months of complacency?

2. **Office Biopsy.** In the presence of any suspicious granulations, mucosal ulcerations or hypertrophy of the cervix a biopsy is indicated. This may be done in the office by using a punch biopsy or a Gusberg biopsy punch.

3. **Operating Room Biopsy.** The operating room biopsy is by far the most superior method of evaluating a suspicious case of carcinoma of the cervix. Under anesthesia a circular biopsy of the complete squamo-columnar junction can be made with the scalpel. It can be combined with a biopsy of the endometrium and endocervical canal. An exact estimate of the type and size of radium applicator can be evaluated at this time, in the event that the biopsy should reveal that malignancy is present.

Cases

The following abstracts of cases will illustrate the value of the critical standards mentioned above:

Case I. Illustrates the importance of doing a biopsy in the presence of abnormal excessive bleeding, although the cervix may be innocent in appearance. M. D., age 30, white. Admitted to the hospital August 25, 1951 with a history of: (1) polymenorrhoea of four months duration. Her periods had been coming at more frequent intervals; and (2) menorrhagia of four months duration. Her periods were quite excessive, and lasted from six to ten days. Pelvic examination at that time revealed a moderate amount of bleeding coming from the uterus. Visualization of the cervix revealed it to be dilated to admit one finger, but the mucosa appeared intact. The fundus was second degree retroverted and slightly enlarged. No adnexal masses were palpable.

A fractional dilatation and curettage was done August 27, 1951, and revealed only a scant amount of endometrial and endocervical tissue. The endocervical curettings showed tissue suggesting epidermoid carcinoma of the cervix. On August 29, 1951 a repeat circular biopsy of the cervix was done and showed carcinoma in situ with beginning invasion of the stroma.

Case II. Illustrates the value of the Papanicolaou smear, and the greater importance of doing a biopsy when a pathological lesion is evident. T. M., age 41. She was seen in the office September 5, 1951 at which time she gave a history of bleeding and spotting for the past three or four months. She had been seen recently in a Cancer Detection Cancer where a "suspicious smear" was gotten. Pelvic examination in the office revealed an area of ulceration and granulation of the anterior lip of the cervix, about 2cm in diameter. There was no palpable parametrial infiltration and the fundus was movable.

A biopsy of the cervix and dilatation and curettage was done in the hospital on September 11, 1951 and revealed squamous cell carcinoma of the cervix, grade II.

Case III. Illustrates the importance of developing a high index of "cancer suspicion" even in the young patient. M. E., age 24. Was seen in the office July 11, 1951. At that time she gave a history of a normal delivery in November 1950. At her six weeks check-up an erosion of the cervix was found and the patient was advised by her family physician to return for cauterization. The patient never returned. Since that time she had increased frequency of periods with increased bleeding, excessive leukorrhea, and cramps. On examination, a lesion of the cervix was noted on the lower lip in the form of a marked granulation about 3cm in diameter and extending from the cervix onto the vaginal wall. Its base was purulent. There was no palpable infiltration of the parametrium and no fixation of the uterus.

On July 14, 1951 a biopsy of the cervix and dilatation and curettage was done. The pathologic report revealed squamous cell carcinoma of the cervix, grade II.

Case IV. Illustrates the importance of investigating by biopsy all cases of contact bleeding. F. R., age 34, gravida O. She was seen in the office on December 15, 1950, complaining of bleeding on intercourse of one month duration. She had undergone a supracervical hysterectomy three years previously. Pelvic examination revealed a cervix, normal in appearance, except for one innocent looking papillary projection about 0.5cm in diameter on the portio. Bleeding was elicited on sounding the endocervix. No fundus was palpable because of the previous hysterectomy.

A biopsy of the cervix and curettage of the endocervix on January 4, 1951 revealed a squamous cell carcinoma of the cervix, grade II.

Conclusion

1. Early diagnosis is our most important weapon today against carcinoma of the cervix uteri.

2. Rigid standards must be established and a high index of "cancer suspicion" maintained.

3. The diagnosis of cancer is made by the laboratory, after proper smears and biopsies have been supplied.

4. The limitation of cytological diagnosis must be realized.

1104 N. Jackson Street

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EARLY DIAGNOSIS OF CANCER OF THE PROSTATE*

Norman L. Cannon, M. D.,**
Wilmington, Del.

In order to restrict this discussion to the early diagnosis of cancer of the prostate, I am forced to limit myself to the presentation of the problem as it arises in only five to ten per cent of the patients seen by the urologist. I shall accept the definition of what constitutes "early diagnosis" as presented by the preceding speaker, Dr. John Hynes, to be that cancer diagnosed before metastasis or extension from the primary site has occurred. Unfortunately for the patient, this early diagnosis does not occur in any more than five to ten per cent of the patients seen, according to figures from the best clinics in the country. Lowsley says that "in the past 95% of cases of prostatic cancer have been beyond hope of operative care when first seen." To improve this appalling statistic, Lowsley states that "any physician who fails to make a rectal examination on his male patients over 45 years of age is guilty of gross neglect."

In comparison to breast cancer, where 50% of cases are diagnosed early, prostatic cancer falls far behind. I suspect that if self-examination of the prostate were feasible and if rectal examinations were esthetically more attractive, the comparative figures with breast cancer diagnoses might improve.

Too often the diagnosis of prostatic cancer is made in reverse order. The metastatic lesion is found first and traced back to a prostatic focus much too late for any treatment other than palliative. The index of suspicion must be kept high if we are to recognize early prostatic cancer before metastasis occurs.

It is not the purpose of this paper, therefore, to discuss the mechanism of prostatic metastasis or to consider the common sites of metastatic prostatic cancer. Nor are we concerned with the symptoms of the metastatic lesions or the effects of extension beyond the prostate.

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*Read at St. Francis Hospital Staff Meeting, January 22, 1952.

**Urologist, St. Francis Hospital.

In the early diagnosis of primary prostatic cancer one must not be misled by the absence of urinary symptoms. The primary nodule in the prostate is too small to produce obstructive changes and its location is commonly away from the urethral aspect of the prostate. The patient may present symptoms of early prostatism, but this is not frequent enough to be relied upon. Any other symptoms such as pain, loss of weight, fractures, edema and constipation are late symptoms of no help in early diagnosis.

As far as diagnostic tests are concerned, the most important one available to all physicians is the information which can be derived from the insertion of the index finger into the rectum and carefully palpating the prostate gland. Here the experienced finger is able to relay its information to the acute physician who is seeking out those suspicious areas in the prostate which may turn out to be early cancer. The cancer must be differentiated from other lesions of the prostate which also feel hard and nodular. Such conditions as prostatic calculi, tuberculous prostatitis, benign fibromata, and leiomyosis all may manifest themselves as suspiciously like a prostatic cancer to the examiner's finger. The malignant nodule is usually in the right or left upper pole of the prostate. It is discreet, fixed, not tender, and distinctly harder than the normal surrounding tissue. The often described stony hard prostate where the entire gland feels liks rock is again a late manifestation of prostatic cancer rather than an early one. There are at present only two other validated diagnostic tests for early diagnosis. One is biopsy and the other is the examination of the prostatic secretion for tumor cells according to the method of Papanicolaou. Biopsy can be a needle biopsy, which requires considerable experience in order to become a useful tool, since the possibility of missing the small nodule is not uncommon. Much better for biopsy purposes is the open perineal operation with biopsy under direct vision. Here frozen section can be done and radical surgical treatment carried out in the presence of a positive diagnosis.

The Papanicolaou stain of the prostatic sediment has been acclaimed by some investigators, but not correlated too well with positive surgical findings by others. A positive Papanicolaou stain diagnosed by an experienced pathologist familiar with cytological specimens can be acted upon with considerable certainty. On the other hand, even in the best of laboratories, many false negatives occur. So much for early diagnostic tests.

Such diagnostic tests as x-rays of the bony spine and pelvis, elevated serum acid phosphatases, elevated sedimentation rates or therapeutic benefit with estrogens, all constitute diagnostic evidence of late metastatic prostatic cancer.

Most of the therapy now being performed for prostatic cancer is palliative therapy and this I shall not discuss at this time. The therapy for early prostatic cancer as defined in this paper is of the same nature as the therapy for early breast cancer as described in the preceding presentation. This consists of complete surgical removal of the prostate and seminal vesicles immediately following a positive pathological diagnosis. This operation when completely performed offers the best hope of cure. It is usually performed in conjunction with a bilateral orchiectomy. These patients are rendered impotent and many have prolonged periods of postoperative urinary incontinence. However, in the best series reported, more than 75% of patients so operated upon regained complete urinary control within a year following operation.

With an estimated 95% mortality within five years of diagnosis in patients treated all other ways other than radical surgery, it seems a small price to pay for these patients to give up their sexual potency in return for cure of their prostatic cancer. The operation is a drastic one and, to a patient who is not subjectively sick, extremely hard to accept. Psychologically the male patient with an early symptomless prostatic cancerous nodule is not as ready to accept surgery as is his female counterpart with a similar nodule accidentally discovered on routine breast examination. This is perhaps the second largest problem with regard to treatment. The first is the difficulty in making the diagnosis early because of the lack of suspicion that such a cancer is there.

Until we discover a more attractive, less mutilating cure for prostatic cancer, the treatment of prostatic cancer will pertain as described in this paper to only a small percentage of the patients we see. It is only through the alert cooperation of the general practitioner in his routine prostatic examination of male patients that more prostatic cancers will fall within the curable group and fewer suitable only to palliative procedures that merely postpone an inevitable death.

1208 Delaware Avenue.

DIAGNOSIS OF RECTAL CARCINOMA*

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Wilmington, Del.

It can be stated at the outset that there have been no recent advances for the diagnosis of rectal carcinoma. Because the general public and physicians, as a part of that public, are becoming evermore aware of the presence of the cancer problem generally, it can safely be said that the rectal examination is becoming a more routine procedure than ever before. However, there are still many instances when this relatively simple examination is not performed as a routine measure in the general physical examination.

Rectal adenocarcinoma can be characterized as follows: (1) *nodular*, (2) *scirrhous*, (3) *colloid*, and (4) *papillary*. The *nodular* carcinoma is usually sessile and the mass projects into the lumen of the rectum and at times tends to encircle the bowel. Ulceration is not uncommon, the base of which may be necrotic. the *scirrhous* type of adenocarcinoma is that in which the fibrous elements play a predominant role over the epithelial portion, giving rise to a contracted hard mass. These lesions do occur in the rectum, but are relatively rare. The *colloid* type of carcinoma is also known as mucoid or gelatinous variety. They are found most commonly in the rectum and rectosigmoid. The *papillary* type resembles the common warty papilloma.

True epitheliomas which have their origin in the anal mucous membrane can extend into the rectum giving rise to the differential problem as to the origin of the tumor. It also should be mentioned that practically all other forms of malignant tumors have been at one time or another described as occurring in the region of the anus and rectum. Final histologic diagnosis must be made in the laboratory.

The mode of spread of rectal carcinoma occurs chiefly in three ways: (1) infiltration; (2) by way of the lymphatics; and (3) by way of the blood stream.

Infiltration is used to denote local invasion both peripherally and in depth. The malignant cells invade in order: the mucosa, muscularis mucosae, submucosa, muscular coats and later the perirectal fascia. It is only after the penetration of this fascia that invasion of neighboring structures can take place.

Dissemination by way of the *lymphatics* is the most frequent means, and therefore the most important. From the lymph nodules and channels in the submucosa and between the muscular coat spread occurs to the lymph sinus which is outside the muscular coats but inside the fascia porpria of the rectum. From this area the spread is to the glands situated between the rectum and sacrum, and from here spread occurs in an upward, downward, and lateral direction.

Carcinoma of the rectum is less prone to invade the *blood stream* than sarcoma. However, late in the disease venous radioles may be invaded and carry tumor cells by way of the superior hemorrhoidal, inferior mesenteric, and portal veins to the liver, where a metastasis is set up, usually in the right lobe. The order of frequency for metastasis from the rectum is liver, peritoneum, and lungs.

As is true generally in regards to cancer of any portion of the digestive tract, cancer of the rectum is a process which predominately affects individuals past the age of 40, in which group approximately 85 to 90 per cent of cases occur. Approximately 60 per cent occur in persons beyond the age of 50. It has been commonly observed by various individuals that when cancer of the rectum occurs in the younger age group it tends to be rather a fulminating process. Rectal cancer is two or three times more common in the male sex than in the female.

One of the most distressing features regarding early diagnosis of this disease is the fact that in the majority of cases there is an interval of between four and six months from the onset of the first symptom to either the presentation of the patient to the physician or the establishment of the correct diagnosis.

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*Read at St. Francis Hospital Staff Meeting, January 22, 1952.

**Associate in Medicine, Gastro-Enterology Section, St. Francis Hospital.

Symptoms are often vague and variable depending largely on the duration, location, and size of the tumor. As has been constantly reiterated in the medical and lay press, a change in bowel habit is of paramount importance and warrants complete and thorough investigation. The patient may describe a slight irregularity, an incomplete or unsatisfactory movement, or a complete change from constipation to normal or loose movements, or any combination of the above. Urgency of defecation is frequently noted. Constipation may develop insidiously, for an induced inertia of the colon often does not occur until there is moderate obstruction. The constipation is of progressive variety and frequently alternates with diarrheal type of stool. Because of the inconstancy of normal bowel habit, patients frequently resort to the use of laxation in any form, with a resultant frequent desire for stool which is more reason for the diarrhea than resulting from the neoplasm itself. Care should be taken to question patients regarding early morning diarrhea, for not infrequently the history can be obtained of the individual arising between five and seven for the purpose of defecation.

Attention of the patient is frequently first attracted by blood and mucous which is noted on the outside of the stool or may be mixed with the stool and vary from bright to dark red in color. The blood may be noticed only on the tissue. Approximately 85 per cent of all patients with a malignant tumor of the rectum note blood at some time during the course of their disease. It is not common to have frank rectal hemorrhage. In many cases the observance of rectal bleeding is the earliest sign of a rectal neoplasm.

About 50 to 60 per cent of all patients describe some type of discomfort which is usually not severe. It is often noted as an uneasiness or discomfort occurring in the rectum before, during, or after defecation. Later a feeling of fullness and weight in the rectum develops which may be constant or intermittent. When the anal sphincters are implicated or the tumor mass becomes within the grasp of the sphincteric musculature, pain is more pronounced. When the growth has extended into the perirectal strictures, this causes a heightening of the severity of pain and may be referred to the abdomen, back, hips, and down into the thighs.

In the past undue emphasis has been placed on "ribbon" or "pencil" stools. If this type of stool is present and there is a mass located in the region of the rectum it will usually be a low lying lesion and often involving the anus itself.

General symptoms, such as loss of weight, anemia, lack of strength, and urinary symptoms, are manifestations of a lesion which has spread beyond the confines of the rectum.

In relation to early diagnosis of carcinoma of the rectum the general physical examination is not noteworthy. Of importance, however, are the historical points listed as above, and next in importance is local examination of the anus, rectum, and sigmoid colon. It is well-known that approximately 75 per cent of malignancy involving the anus, rectum, and sigmoid are within reach of the finger used on digital examination. Care should be taken to carefully palpate the entire circumference of the rectal wall, for if the individual has a large rectal pouch small lesions might well be missed. When the mass is palpated it may be felt as an elevation above the surface of the mucous membrane. It is frequently firm to the touch and irregular in outline. The base is frequently indurated, broad, and fixed to the underlying tissues and the wall around the tumor is slightly thickened. Trauma from the examining finger may provoke a varying amount of bleeding and this is easily seen upon withdrawal. For tumors that lie just without the reach of the digit, it is wise to instruct the patient to strain down, for the increase in intra-abdominal pressure often forces lesions in the region of the recto-sigmoid inferiorly so that they can be palpated with relative ease.

The other most important diagnostic procedure is the procto-sigmoidoscopic examination when a rectal or recto-sigmoidal lesion is suspected. The rectum and sigmoid should be carefully cleansed prior to the examination by the administration of a plain warm tap water or saline enema. The sigmoidoscope is introduced until the tumor is located and its size, degree of fixation, and extent of ulceration, as well as the presence of blood and pus, are noted. If the lumen is partially occluded, care should be taken not to traumatize the strictured area for rupture of the bowel wall can occur without difficulty. Once the lesion is encountered, biopsy material can be obtained and the tissue sent to the histological laboratory for pathological diagnosis. Should bleeding occur following biopsy, it may be controlled by pressure, topical application of a saturated solution of potassium permanganate or a 10-20 per cent silver nitrate solution.

The roentgenographic examination of the rectum for rectal carcinoma is unsatisfactory; and, if the diagnosis is made by the roentgenologist, it should be only at the embarrassment of the clinician.

The most common error in the diagnosis of cancer of the rectum is making the diagnosis of external or internal hemorrhoids, for it is still reported that approximately 10-15 per cent of all cases who have carcinoma of the rectum have had a previous hemorrhoidectomy.

Conclusion

Because carcinoma of the rectum is one of the most accessible digestive tract tumors, continued efforts in the direction of public education as to early symptoms and signs, and the need of thorough examination at the onset of symptoms, and the continued and progressive awareness of the clinician of the value of routine digital examination of the rectum and the more routine use of the sigmoidoscopic examination, will materially decrease the mortality statistics of this disease and of the cancer problem generally.

Early diagnosis can be accomplished only if the patient presents himself shortly after the onset of symptoms and a careful history elicits important clues followed up by proper local examination with biopsy of the lesion demonstrated.

914 Jefferson Street.

Speeding on U. S. streets and highways last year injured 570,080 men, women and children.

Speeding on U. S. streets and highways last year killed 13,730 men, women and children.

In 1951, 9,470 pedestrians were killed in U. S. traffic accidents.

S. P. A. D. Book Free

A patron of the Society for the Prevention of Asphyxial Death Inc., interested in making the causes and prevention of asphyxia better known among physicians of Delaware state, has kindly offered to donate a copy of the Art of Resuscitation, by Paluel J. Flagg, M.D., to the first 100 physicians who become members of the Society following the release of this information in the Delaware State Medical Journal. The reviews of this book are highly laudatory. The book lists for $6.00. Volumes donated will be autographed by Dr. Flagg.

Physicians who wish to receive this autographed volume for their library are asked to apply for membership in the Society for the Prevention of Asphyxial Death, Inc., enclosing membership dues of $5.00. Communications should be addressed to Secretary, S.P.A.D. Inc., 2 East 63 Street, N. Y. C. 21, New York.

New York University

A seminar on the rehabilitation of children will be given October 20th through 24th, 1952, and January 19th through 23rd, 1953, at the Children's Division, Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, 400 East 34th Street, New York City.

Illustrated talks, observations, lectures and demonstrations, including participation in clinics, will be used to give busy practitioners, particularly pediatricians, a detailed picture of the theory and practice of a modern children's rehabilitation service.

Since good rehabilitation depends on the concerted efforts of many services and skills, the course will stress the integration of all the means and methods used to evaluate, prescribe for, treat and train a disabled child and to establish his proper relationship with his community.

Ninety-seven per cent of drivers involved in 1951 auto accidents had at least one year of experience behind the wheel.

In 1951, 290,660 pedestrians were injured in U. S. traffic accidents.

Editorials

DELAWARE STATE MEDICAL JOURNAL

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Vol. 24 May, 1952 No. 5

Black Sheep

A few weeks ago the country was shocked to read in the March 24, 1952 issue of Time magazine (p. 80) that some California physicians had been "gypping" the state's Blue Shield Plan—California Physicians' Service.

This alarming charge had been whispered about for some time previously, so the C.P.S. trustees had canvassed a large group of patients and, regrettably, found that some 200 doctors had bagged "swag" estimated at over $1,000,000 out of the $18,000,000 paid out last year in behalf of its 850,000 subscribers.

How could such fabulous skullduggery be done? Says Time: "One chiseler made the crude mistake of sending in a bill for surgery and office calls while the patient was actually in New York. Others got higher fees by raising the category of their work—e.g., charging for a cataract operation instead of merely draining a stye. There was wholesale chiseling by charging for imaginary x-rays and laboratory tests."

This story also received nationwide publicity in the daily press, and the public reaction was prompt and potent, in effect: Too bad the medical profession contains so many crooks, but what is it going to do about it? Is it really as bad as they say it is, or is it even worse? Etc., etc.

The profession immediately took steps to do something about it, as outlined by Dr. John M. Cline, President of the American Medical Association who, in an address made on April 2, 1952 at San Francisco, before the annual National Blue Shield Conference, said:

"At this time I should comment upon the bad recent publicity with reference to California Physicians' Service. You gentlemen will be going to your homes all over the country and I think you should have information which was not included in a certain periodical article or some of the newspaper accounts.

"Out of some 11,500 physicians serving California Physicians' Service, the investigation revealed that about 200 probably were abusing the plan. Perhaps, "over using" might be a better term. Out of that whole group there were two or three instances of what appeared to be — and I do not possess the full evidence — actual fraud. In one instance it is reported that a physician billed the Service for an operation which he did not perform. In another instance, a physician is said to have performed a simple operation and billed the Service for an operation of much greater magnitude which carried a much higher fee. I am informed that in one case fraud has been established. The others are in the process of investigation but the initial evidence indicates that they will fall into the same classification.

"The County Medical Association has already proceeded against in the first instance. The offender, if found guilty, will be disciplined to the full extent possible, which is

LIBRARY OF THE

loss of his membership. Already the State Board of Medical Examiners has been apprised of this physician's supposed misconduct and if the evidence justifies action, his license probably will be revoked on grounds of moral turpitude.

"After that the District Attorney of the County and perhaps the Federal District Attorney will be supplied with the evidence and criminal prosecution will be instituted. That decision lies without the scope of the medical profession, but the medical profession cannot and will not tolerate that variety of conduct on the part of *any* physician.

"The publicity has had a serious initial effect upon the medical profession and upon the Blue Cross and Blue Shield Plans all over the country. In the end, I believe the net result will be good. The medical profession is determined to see that our prepayment plans are properly protected from unscrupulous physicians and that those who infringe the code of ethics will be disciplined. This will strengthen the program and build public confidence in the prepayment plans."

Such prompt and determined action will make future would-be chiselers more inclined to remember the Biblical injunction: Be sure your sins will find you out. While the medical profession should contain *no* black sheep, it welcomes a comparison of its mere two per cent with that of any other group in the community. Even so, black sheep in Blue Shield never leave a white trail.

MISCELLANEOUS

Protein Structure Discovered

Science has drawn a step nearer to creating life with the recent discovery of how atoms of nitrogen, carbon and other elements fit together to form protein molecules, according to an article by Ewart Thomas in the April issue of *Popular Mechanics Magazine*.

The discovery of how some protein molecules are formed already is being hailed as "one of the greatest scientific discoveries of our time" because "it not only makes possible a new direct approach to the conquest of many diseases, but partially solves the baffling secret of life itself."

The analysis of the structure of protein molecules by Professors Linus Pauling and Robert B. Corey opens up several new fields of research, the article states. Most important of these is the possibility of designing and creating molecules that would attach themselves to virus proteins and then destroy the potency of the viruses by forcing a rearrangement of their atomic structure. Professor Pauling, noting that many of the new dugs such as the sulfas and penicillin are believed to be potent because they combine with proteins and other organisms, thinks the day may come when it will be possible to sit down in the laboratory and write out the specifications for whatever kind of molecule is needed for vanquishing a particular disease.

"There is even a suggestion," the article states, "that molecules might be fashioned which would act on the wild growth of protoplasm in cancer, reducing or eliminating the malignancy."

Some time in the future, too, according to the article, chemists may be able to manufacture virus proteins. This would be a tremendous scientific achievement because a virus has some of the properties of a living organism. It can reproduce itself, although it has no metabolic reactions. "When atomic chemists finally create synthetic virus proteins they will have come close to manufacturing life itself," the article states.

Another possibility growing from the discovery of how protein molecules are formed is the manufacture in the laboratory of protein foods directly from the elements of which they are composed. Economically, the process could hardly compete with present ways of raising foodstuffs.

Professors Pauling and Corey worked from the basic knowledge that a protein consists of long chains of amino acid residues . . . relatively simple substances. They decided to try to learn the atomic structure of some of the amino acids and then assemble these structures into shapes or combinations that might fit the requirements for a protein. This was done by means of x-ray diffraction photography.

The next step consisted of assembling three-dimensional diagrams of amino-acid crystal structures after which models of several proteins were made from brightly colored wood and plastic "atoms". The models of the atoms represent a lineal magnification of several million times. On the same scale a grain of rice would extend from New York to the Hawaiian Islands, or from London to the heart of Texas.

The exploration of proteins is only one of the many contributions that Professor Pauling has made to chemical knowledge. He is the principal author of the resonance theory of chemical bonds. He is also one of the outstanding American scientists selected by Popular Mechanics Magazine for its Golden Anniversary Hall of Fame. Professor Pauling is head of the chemistry and chemical-engineering division of the California Institute of Technology, with which Professor Corey also is associated.

Largest Medical Exhibit

Chicago's half-mile long Navy Pier will be used June 9-13 to house the largest medical scientific and technical exhibits ever staged.

Three hundred scientific and 375 technical exhibits will have a frontage of more than three miles. They will occupy nearly a quarter of a million square feet of floor space, according to Thomas R. Gardiner of Chicago, business manager of the American Medical Association.

The exhibits will be held in connection with the 101st annual session of the A.M.A. Approximately two-thirds of the space will be devoted to the technical exposition, a presentation of informative displays by manufacturers and distributors of practically the entire scope of the physicians' needs.

The scientific exhibits, sponsored in most part by doctors, will show the latest developments and techniques in virtually every specialty of medicine. Emphasis, however, will be placed on subjects of interest to the family physician, according to Thomas G. Hull, Ph.D., of Chicago, director of the A.M.A. Bureau of Exhibits.

A registration of between 12,000 and 15,000 physicians from all parts of the country is expected at the convention. In addition, about 15,000 other medical personnel, exhibitors and guests are expected to attend. This large attendance makes it necessary to limit admission to the exhibits to A.M.A. members and their guests.

Commission Moves to Baltimore

The Commission on Chronic Illness, which maintains offices in the American Medical Association's headquarters building in Chicago, will move to Baltimore July 1. A special, intensive study of chronic disease will be made in Baltimore.

The commission was founded in 1949 by the A.M.A., the American Hospital Association, the American Public Health Association and the American Public Welfare Association. It is headed by newly-appointed Dr. Dean W. Roberts, Baltimore, deputy director of the Maryland State Department of Health, and a member of the faculty of Johns Hopkins University.

The study of chronic disease among city dwellers, during which 4,000 Baltimore families will be surveyed and tested, will be a companion-study to one on the rural population of Hunterdon County, New Jersey.

The studies will provide answers to pertinent health questions involving the estimated needs for medical care and related services of the chronically ill, and the extent of chronic disease in urban and rural populations. The studies are expected to take several years to complete.

New Interns Appointed By National Matching Plan

A national matching plan has been used for the first time this year to place new interns in hospital appointments. The plan was designed to help lessen the confusion which has occurred in the past when hospitals were seeking 10,000 interns from a graduating class of 6,000.

Under the plan sponsored by the National Interassociation Committee on Internships, hospitals and students contact each other freely during the student's senior year. Students apply for any internship which interests them, and visit hospitals of their choice. After these preliminaries have been completed, students and hospitals file confidential ratings with the Committee. The two are then matched, with the student receiving the internship he prefers most, if this agrees with the hospital's rating of him.

Success of the plan is indicated by the fact that 84 per cent of this year's new interns were matched with the hospital they indicated as their first choice. An additional 10 per cent received their second choice placement. Seventy-four per cent of the hospitals received the student they designated as their first choice.

In an article in the May 1952 issue of the *Journal of Medical Education*, Dr. F. H. Mullin, Dean of Chicago Medical School and chairman of the internship committee and John M. Stalnaker, director of studies for the Association of American Medical Colleges, report on the results of the first year's matching. They express the opinion that the plan may be even more fully utilized when its success is generally known.

In March of this year punched rating cards were run through a machine which automatically matched hospitals and interns, in most cases with their first choices.

Approximately 95 per cent of this year's interns participated in the plan. Some 98 per cent of the hospitals offering internships were participants.

The National Interassociation Committee on Internships is composed of representatives from the Association of American Medical Colleges, Council on Medical Education and Hospitals of the A. M. A., American Hospital Association, American Protestant Hospital Association, Catholic Hospital Association, and the medical services of the Federal agencies offering internships.

IN FOREIGN LANDS

In Recent Crucial Elections

90% of Belgians	✓ VOTED
89% of Italians	✓ VOTED
82% of Englishmen	✓ VOTED
70% of Japanese	✓ VOTED

BUT IN THE U. S. A.

51% of Americans Voted in the

Last Presidential Election!

LET'S BE 100% AMERICANS

LET'S REGISTER

and

LET'S VOTE!

OBITUARY

J. William Urie, M. D.

Dr. James William Urie, 46, of Elmhurst, died suddenly of a heart attack on April 17, 1952 at his summer cottage at Rehoboth, where he had gone for a short rest. He had not been ill.

Dr. Urie had been health officer at The Memorial Hospital for five years. He recently was named nursing school registrar. He also had served as secretary to the hospital medical staff. He was also on the Wilmington General Hospital staff.

Dr. Urie, in addition, served as physician to all Conrad High School football teams since the school opened in 1935. In 1950, the high school year book, "The Conradian," was dedicated to him.

Dr. Urie was born March 28, 1906, near Kennedyville, Md., the son of Mrs. Delia Ann Urie and the late Dr. James William Urie.

He was graduated from Chestertown High School, and from the Hahnemann Medical College, Philadelphia, in 1929. He served his interneship at the Hahnemann Hospital and came to Elmhurst to practice in 1931.

During the last war, he entered service as a first lieutenant. He saw action on Leyte and Luzon. During the campaign on Luzon he was wounded and was awarded the Bronze Star for heroic action in rescuing several wounded men.

He was placed on the inactive list of the Medical Corps Reserves in November, 1945, with the rank of captain.

Dr. Urie was a member of the New Castle County Medical Society, the Medical Society of Delaware, the American Medical Association, and the American Academy of General Practice. He also was a member of the Newark Country Club.

Dr. Urie was married to the former Anna Rasin of Kennedyville on July 9, 1931.

In addition to the widow and mother, who lives at Kennedyville, survivors are a sister, Mrs. Catherine White, Kennedyville; a niece, and two nephews.

Funeral services were held on April 21, 1952 in Kennedyville Methodist Church. Interment was in Still Pond Cemetery.

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CRANIOCEREBRAL TRAUMA*

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Baltimore, Md.

It is an established fact that, in the past decade, trauma to the head has become one of the major causes of death. R. Glenn Spurling has stated: "The number of severe head injuries has increased in direct ratio with each increase in the speed of transportation." It is true also that the number of qualified specialists in neurology and neurosurgery has increased greatly in the past decade. Even so, because of the wide distribution of severe head injuries, it is obvious that only a small percentage of them can be cared for by these qualified specialists. Every general practitioner and every general surgeon in every locality will at one time or another be called upon to treat a patient with craniocerebral trauma. The manner in which the patient is treated is all important and while frequently determining survival or decease of the patient, always determines his future value to society.

It is imperative, therefore, that the general practitioner and especially the general surgeon, be familiar with the broad general principles upon which the modern treatment of head trauma is based. These principles are based on a knowledge of the basic anatomy, physiology and pathology of the brain. A short review of the pertinent anatomic, physiologic and pathologic data will therefore be considered before proceeding with classification, diagnosis and treatment.

From an anatomical standpoint, the skull, the membranes covering the brain and spinal cord. The great venous sinuses lying between folds of the dura, the middle meningeal artery and the cerebrospinal fluid are most important.

The skull is a rigid container which cannot expand and contract to accommodate for changes in volume of its contents. The foramen magnum at the base of the skull is a large opening through which the brain stem joins the spinal cord. Many important medullary structures are located in this area. Both of these facts are important from the standpoint of both generalized and focal pressure on neighboring structures. At the same time the skull is so constructed that it can transmit force to the cranial contents without being fractured. For this reason fatal brain injuries can be produced without demonstrable skull fractures.

The membranes covering the brain are the dura mater, the arachnoid and the pia mater. The dura mater is a tough fibrous structure made up of two layers. The outer layer forms the endosteal lining of the cranial bones and the inner covers the brain. One extension of the dura forms a longitudinal partition between the two cerebral hemispheres. A second extension forms a horizontal partition separating the cerebellum from the cerebral hemispheres. An opening in this partition is in the region of important structures. Large venous sinuses lie between folds of the dura. The superior longitudinal and the two lateral sinuses receive venous blood from the brain through thin walled cortical veins. The sinuses empty into the internal jugular veins. Trauma in the region of these large sinuses may cause rupture of the sinus itself or of the veins emptying into it, and thereby produce a collection of blood in the subdural space to form a subdural hematoma.

It is extremely important that one be familiar with the course of the middle meningeal artery, which is frequently involved in head trauma. It enters the base of the skull through the foramen spinosum and runs through a bony groove in the temporal bone from which it is distributed to the dura mater. This artery is frequently torn by linear fractures in the temporal bone. Arterial bleeding thus produced accumulates between

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* Read before the Medical Society of Delaware, Wilmington, October 9, 1951.

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the dura and the skull. A clot thus formed dissects the dura from the skull and gradually enlarges to form an extradural hematoma, one of the most important surgical complications of head trauma.

The cerebrospinal fluid is secreted chiefly from the chorioid plexus in the lateral ventricles. It passes through the ventricular system to the cisterns at the base of the brain. It then flows over the surface of the brain in the subarachnoid spaces. Most of the fluid is then absorbed into the venous sinuses through the arachnoidal villi and granulations. Normal absorption may be altered by blood in the spinal fluid circulating in the subarachnoid space. The cerebrospinal fluid acts as a space compensating mechanism between the brain and the skull. Blood in the spinal fluid acts as an irritant and produces signs and symptoms characteristic of subarachnoid hemorrhage.

One should be familiar with the physiology of the cerebral cortex in order to correctly interpret neurologic signs which may be produced by injuries to the brain itself. Some of the important gross areas of localization include the frontal poles, the motor and sensory areas, the speech center, the visual centers and the basilar structures of the brain. Damage to the frontal poles causes alteration of cerebration, concentration and judgment. Lesions of the motor cortex produce variations of voluntary muscular activity. Generally speaking destructive lesions cause contralateral hemiplegia while irritative lesions of cortical cells produce Jacksonian epileptiform seizures on the opposite side of the body. The sensory area lies directly behind the motor area. Damage in this area causes sensory disturbances on the opposite side of the body. The speech area is localized in a wide area centered about the junction of the Rolandic and Sylvian fissures in the left hemisphere in the right handed and the right hemisphere in the left handed. The anterior portion is chiefly motor. Extensive lesions in the speech area produce both motor and sensory aphasia. The visual centers are located in the occipital poles in the Calcarian cortex on the mesial surface. Damage in this area produces visual field defects depending on the size of area involved. Damage to the basilar structures in the region of the hypothalmus and mesencephalon can produce alterations in blood pressure, water regulation and temperature—producing glycosuria, hyperemia and death.

Numerous classifications of head injuries have been made, some based on the principal of clinical entities, others on the physiological or anatomical conditions present. The following classification is based on the resultant gross pathology and is an abstraction from personal experiences and those in the literature.

1. Simple scalp wounds:
   Brush burns, contusions, lacerations, subgalea hematoma.
2. Skull fracture (with or without associated brain injury)
   - A. Vault
   - B. Base
   - C. Simple (linear or comminuted)
   - D. Depressed
   - E. Compound
3. Brain Injury (without or without associated skull injury)
   - A. Concussion
   - B. Oedema (cerebral)
   - C. Cerebral contusion
   - D. Cerebral laceration
   - E. Hemorrhage
     - (1) Extradural
     - (2) Subdural
     - (3) Intracerebral
     - (4) Subarachnoid
     - (5) Diffuse petechial
4. Combinations of the above.

Subsequent discussion largely rests on this classification.

No routine procedures can be followed in the initial stage of a serious head injury. The initial symptomatology will vary in almost every case. Often the later course of individuals with exactly similar initial symptoms will vary. Every means should be exhausted to ascertain the condition of the patient immediately following the injury and in the interval which may have elapsed before seen by a physician. If this interval is a matter of hours the information obtained may be the only guide for the proper diagnosis and treatment. The manner in which an injury is sustained is also important from a diagnostic standpoint.

Symptoms of traumatic shock are infrequent in uncomplicated cases of head trauma. If shock is present one should examine carefully for other injuries such as fractured bones, including cervical spine, chest injuries, ruptured viscus with intrathoracic or intraperitoneal hemorrhage and chest injuries. When signs of shock are observed, the treatment of shock takes precedence over every other consideration.

Such matters having been taken care of an effort should be made to classify the injury and to determine as soon as possible what type of operative or non-operative treatment is indicated.

Generally speaking there are certain injuries which fall into the non-operative group. Namely:

1. Simple concussion
2. Cerebral oedema
3. Cerebral contusions and lacerations uncomplicated by extradural, subdural or intracerebral hemorrhage producing increased intercranial pressure.
4. Uncomplicated subarachnoid hemorrhage
5. Simple linear fractures of base of the skull without associated brain injury.

Those requiring operative treatment include:

1. Scalp lacerations
2. Depressed fractures of skull, both simple and compound
3. A few linear fractures complicated by dural tears producing cerebrospinal fluid rhinorrhea
4. Extradural hematoma
5. Subdural hematoma
6. Penetrating wounds of brain
7. Intracerebral clots (encysted)

Careful observation and repeated neurological examinations together with certain indicated diagnostic procedures such as spinal puncture, x-ray examination, electroencephalographic studies and occasional air studies are used to make a differential diagnosis. Important neurological signs include

1. The depth and duration of unconsciousness
2. The presence of paralysis
3. The presence of decerebrate rigidity
4. Convulsions
5. Cervical rigidity
6. Alterations in pulse, respiration, temperature and blood pressure
7. Occular signs
8. Vertigo
9. Mental symptoms

By and large, the degree of cerebral trauma is in direct ratio to the depth and length of unconsciousness. The length may vary from a few minutes to several weeks. Concussion is clinically characterized by a transient impairment or loss of consciousness which may last from a few seconds to several hours. Having regained consciousness, most usually having vomited, the patient makes a speedy and complete recovery. The spinal fluid is clear under normal or increased pressure. A patient who has not regained consciousness after two or three hours has probably sustained contusions and lacerations of the brain.

A contused brain implies a bruised brain with moderate bleeding into the subarachnoid space with normal or increased spinal fluid pressure. Cerebral laceration implies a torn brain with varying amounts of bleeding into the subarachnoid or subdural space. Without gross bleeding the spinal fluid pressure is normal or lower than normal. The most frequent points of laceration and contusion are at the tips of the frontal, temporal and occipital poles. The opposite side of the brain to the point of impact may be contused or lacerated by contra coupe.

Cerebral oedema is due to an increase of tissue fluids in the brain. Recent experimental studies indicate that this condition is not a frequent condition following trauma. When it does occur, uncomplicated, the spinal fluid is clear and under increased pressure.

Subarachnoid hemorrhage, which implies bleeding into the subarachnoid space, is usually followed by irritative signs such as restlessness, delirium, neurologic like head pains, cervical rigidity and all the classical signs of meningitis. The spinal fluid contains blood and the pressure is normal or less than normal when gross hemorrhage is present.

Patients with small deep seated multiple hemorrhages show characteristic signs of low spinal fluid pressure: rapid pulse and respiratory rate; sharp rise in temperature; semiconsciousness with restlessness; spasticity of muscles, cranial nerve or other paralyses; lethargic state and other neurologic signs, depending on the location of the lesions—the most frequent sites being in the region of the

Vein of Galen system, the brain stem and the basal ganglia.

The important measures to be considered in the non-operative treatment include:

1. The control of shock
2. The maintenance of free respiratory exchange and the prevention of drainage of mucous, vomitus and secretions into the bronchial tree. This is best accomplished by postural drainage. The foot of the bed is elevated to an angle of 30°. The patient is placed on the abdomen or side, with the head in such position to permit free drainage.
3. The control of restlessness by sedative drugs and limited restraint. The drugs which have been found to be most effective include paraldehyde by mouth or rectum; sodium luminal in fairly large doses hypodermically or sodium amytal intravenously. Morphia is contraindicated because of its depressing effect on the respiratory centers and its masking effect on the state of consciousness. Often the catheterization of a full bladder will produce remarkable results in controlling restlessness.
4. Nourishment in the unconscious patient should be maintained by intravenous injections of dextrose 10% solution in sterile water or by a high caloric, well-balanced intake by gavage.
5. The question of fluid intake is still a most disputed question. Some advise extreme dehydration. Others feel that this is unnecessary in most patients and that it may produce confusing elevation of temperature, and an alarming high protein nitrogen. We have been convinced that best results can be obtained by limiting the fluid intake to 1500 cc per 24 hours. 10% dextrose in distilled water intravenously is recommended.
6. The question of spinal puncture is also a disputed one. In some clinics spinal puncture is performed on every case of craniocerebral injury regardless of the clinical picture. Others are more conservative and recognize certain contraindications. Numerous proven fatalities have been reported following spinal tap on patients with increased intercranial pressure. Pressure cones may be produced at the incisura or the foramen magnum causing death or alarming medullary symptoms. We feel that lumbar puncture is indicated in cases which do not show clinical evidence of increased intercranial pressure, mainly to determine the presence or absence of blood. At times repeated punctures are indicated for the removal of bloody spinal fluid where the bleeding has ceased and the blood is causing meningeal irritation. Spinal puncture is contraindicated in all cases where there is clinical evidence of high increased spinal fluid pressure or of expanding lesions in the posterior fossa. Bilateral exploratory trephines under local anaesthesia is a simple and safe procedure and should be used for diagnosis and localization in such cases.
7. The use of hypertonic solutions to reduce intercranial pressure is reserved for those patients who are in critical condition from surgical complications and when time is needed to prepare the patient and the operating room for surgery, or for those patients who develop increased intercranial pressure from meningeal irritation without surgical complications. Hypertonic sale solution or concentrated dextrose will reduce the pressure quickly. For prolonged use concentrated sucrose (50%) is effective but is not without danger of renal damage.

One of the most important operative procedures in craniocerebral trauma is the proper treatment of scalp wounds. All scalp wounds should be handled meticulously for even the small puncture wounds act as portals for infection. The important steps to be followed are:

1. Careful cleansing and shaving of a wide area about the wound, and the wound itself after blocking off with local anaesthesia.
2. Adequate draping
3. Inspection and palpation of pericranium and skull for fractures
4 Control of hemorrhage
5. Careful debridement
6. Accurate primary suturing of the wound in layers, using interrupted black silk sutures in the galea and through and through interrupted sutures in the scalp
7. The use of sulphonamides and antibiotics to prevent infection.

It should be kept in mind that the improper care of a simple scalp wound may result in serious complications such as osteomyelitis—cerebral abscess or meningitis.

Practically all depressed fractures of the skull, both simple and compound, require surgical repair. This type of injury may be associated with dura tears and local brain contusion and laceration which will also require repair. The principles to be followed include those mentioned for scalp wounds and in addition careful removal of detached bone fragments and foreign material, adequate exposure for inspection and repair of the underlying structures and the control of hemorrhage, removal of devitalized brain tissue by suction and careful closure of the dura to prevent spinal fluid leak. Large bony defects should be left for a secondary operation. Some small defects can be repaired at the time of the initial operation, depending on the condition of the patient and the facilities at hand.

Extradural hemorrhage almost always has its origin from a tear in the middle meningeal artery usually produced by a linear fracture extending across the squamous portion of the temporal bone. The bleeding is usually slow as it strips the dura from the skull, but it may expand rapidly to cover a large area of the hemisphere to produce increased intercranial pressure and focal neurological signs. The classical syndrome may manifest itself by a short period of unconsciousness following a blow on the head, followed by a lucid interval in which the patient may complain of headache and nausea but be perfectly rational. This interval in turn is followed by other signs of increasing intercranial pressure: drowsiness, stupor, coma, slowing of the pulse, vomiting and elevation of blood pressure. This state may be preceded or followed by focal signs such as weakness of the contralateral face, arm and leg with reflex changes and a dilated pupil usually on the side of the lesion. If the condition is not recognized and treated the coma deepens—there may be a convulsive seizure and the pulse and temperature increase and the blood pressure falls. Medullary function fails and the patient dies within several hours. Long before these symptoms develop a diagnosis should be made and operation performed for removal of the clot and the control of hemorrhage. Doubtful cases should be explored early. The original burr opening on the suspected side at the temporal ridge will confirm the diagnosis and serve as a starting point for a liberal subtemporal exposure for the removal of the clot and the control of bleeding.

Subdural bleeding usually arises from a tear of one or more of the cortical veins entering the venous sinuses. In severe head trauma, laceration and contusion of the brain may be present and therefore bleeding from the cortical vessels may be either venous or arterial and difficult to control. Bleeding spreads unrestricted because of the nature of the subdural space. It may consist of a thin soft clot over a portion of the cortex or it may be found as a large collection of blood over one or both hemispheres. In most cases the arachnoid is torn and the leakage of cerebrospinal fluid produces a mixture of blood and spinal fluid. This accounts for the fact that solid subdural clots are not often encountered. In the acute form the symptoms vary widely and depend on the location of the brain injury and the extent of bleeding. Most patients are unconscious after the injury and remain so. Signs of increased intercranial pressure develop with or without focal signs, depending on the location of the lesions. When one is forced to treat the patient surgically at an early stage, the treatment is often unsatisfactory due to the fact that the venous or arterial bleeding is difficult to localize and control.

Often multiple exploratory burr openings are necessary to locate and evacuate the blood. Drainage is frequently necessary. Improvement is usually slow after operation. The control of increased intercranial pressure and the use of non-operative treatment measures are the main points to be considered. Re-exploration for fresh bleeding is frequently necessary when there is a secondary rise in intercranial pressure.

Chonic subdural hematoma presents a different picture clinically. This condition usually follows a slight trauma to the head which produces a small tear in a cortical vein entering the venous sinuses without other brain damage. The bleeding is slow and intermittent allowing the brain to accommodate itself to a gradual increase in intercranial pressure without definite early signs. Symptoms may appear within a few days but usually weeks or even months elapse before symptoms appear and the condition is suspected. During this period the blood becomes encapsulated and may extend over the entire hemisphere or may be localized over a smaller area.

The symptoms consist of personality changes, mild intermittent headache, drowsiness and mental retardation. Later, as the intercranial pressure slowly increases, nausea, vomiting, dizziness and blurred vision develop. Convulsions and localized paralyses are not frequently encountered.

The neurological signs are those of slowly increasing pressure. Focal signs are variable and slight and therefore cannot be relied upon for diagnosis or localization. The spinal fluid pressure is slightly elevated and slightly xanthochromic.

Exploratory trephine openings will establish the diagnosis when the exposed dura presents the typical greenish-blue appearance. When the outer wall of the sac lying on the under surface of the dura is opened, brownish-red liquid clots, often in large quantities, evacuate themselves. The trephine opening should be slightly enlarged to permit adequate opening in the dura and sac to permit free evacuation to effect a cure without drainage. Occasionally solid clots and clots in all stages of degeneration are encountered. In such cases when the clot cannot be removed it is necessary to turn a bone flap and remove the entire sac with its contents. It is not necessary to remove the sac to effect a cure. Bilateral exploration is always indicated, for the condition is bilateral in 20% of the cases.

The treatment of penetrating wounds of the brain is based on the principles developed by Dr. Cushing and his co-workers in World War I. Only a few modifications and refinements have been added. These principles briefly consist of

1. Thorough cleansing of the area surrounding the wound as mentioned in treatment of scalp lacerations
2. Enlargement of the scalp wound to expose the bony involvement
3. Enlargement of bony involvement to give adequate exposure of involved brain
4. Careful debridement of all structures from without inward
5. Control of hemorrhage by coagulation or silver clips
6. Removal of all macerated brain, small bone fragments and debris by suction and irrigation
7. Removal of metallic bodies when feasible and possible without large damage to the brain
8. Repairs of dura with fascia or prepared membrane to effect a tight closure
9. Closure of scalp without drainage as described in scalp wounds
10. Use of chemotherapy and antibiotic therapy to prevent infection

The operative treatment of cerebrospinal fluid rhinorrhea is a formidable procedure and should be left to the trained neurosurgeon and avoided by the occasional intercranial operator.

Time does not permit a discussion of the common sequela, of craniocerebral trauma. It is hoped that such sequela, as epilepsy, cortical atrophy and the so-called post concussion syndrome will be less frequently encountered as the general principles of treatment are more frequently employed.

In this paper I have made no pretense of thoroughly covering all aspects of craniocerebral trauma. Neither has an attempt been made to discuss in detail the non-operative treatment or operative technique. It has been written primarily to stimulate more detailed investigation by the physician and surgeon who is not himself a neurologist or neurosurgeon.

2 E. Read Street

Discussion

Dr. P. J. Gordy (Wilmington): I would like to thank Dr. Coblentz for this clear and interesting paper on the general care and approach to head injuries. He has covered the entire field.

I would only like to perhaps re-emphasize several points that he has mentioned. One is the extreme importance of the proper care of scalp wounds. As he says, it is too often forgotten that a scalp laceration is a portal of infection which may lead to serious complications, such as osteomyelitis, cerebral abscess, or meningitis.

In the approach to fluid balance in the

head-injured patient, I think the general trend, as Dr. Coblentz has pointed out, is toward leaving behind the older methods of extreme dehydration. Extreme dehydration in the patient who has been restricted in his fluid intake can be a striking thing and give a picture almost as alarming as was the head injury itself. So only an adequate fluid intake should be given.

Probably the most important single thing in the non-operative care of the head injury is maintenance of a clear airway, going as far as reinserting trachea tubes in an attempt to clear the bronchial tree.

In diagnosing time for surgical intervention in head injuries, the list or group of factors, as Dr. Coblentz has mentioned, should be, of course, interpreted as a whole. No single sign gives us the "pitch" on when to go in. I think the most, or among the most important of those, is the depth of unconsciousness of the patient, which depends on the careful observation from the time he enters the hospital so that you can decide whether or not the state of consciousness is deepening, staying the same, or improving.

The question of subdural hematoma of course, divides itself into the acute and chronic subdurals.

One thing might be mentioned in addition to Dr. Coblentz' discussion—that is, the presence of subdural hematomas in infants, bringing up a different problem but a very important one, in diagnosing these adequately and sufficiently early, so that the fluid can be removed—and, when necessary, the membranes are removed in order to prevent interference to the devolping of the infant's brain.

Chronic subdural hematoma has, as Dr. Coblentz mentioned, a minimum of definite signs. It might be called "the great imitator".

With regards to technique, I would like to say only this one thing. There is no harm in performing a negative trephine. This can be done under local or at the most under slight anasthesia, and it is better to perform a trephine rather than let a possible lesion go by. Many times it is necessary to do that even though we can make a clear preoperative diagnosis of a cranial lesion. It is necessary to say when the trephines should be bilateral, and one may not suffice. You may have to make several.

As an illustration, while in the Army at Frankfurt, we had a boy come in who died shortly after admission. He had been trephined at an earlier admission but, unfortunately, the trephining had not been sufficient to uncover the source of the lesion. Had another trephine been made, say, only 3 cm.'s from the orignial one, there may have been a different outcome.

Dr. D. J. Preston (Wilmington): I am highly grateful to Dr. Coblentz for his excellent and practical discussion of an important subject. It brings to mind an early experience of mine in the treatment of head injuries.

I was asked to see a fifty year old man who had fallen down and injured his head. He was temporarily unconscious, apparently well for two days or so and then would become unconscious again. He was brought into the hospital in a comatose state. When I saw him he had signs of localization in his left hemisphere, with paralysis of the opposite side. That seemed like an obvious enough history. We took him to the operating room, made a hole, removed the blood clot and while on the operating table his pulse rate improved, and his blood pressure and respiratory rate improved. After he was returned to bed, he seemed to do well for the first day; then, despite supportive measures within two more days he died. I was very much disappointed, especially so because I was unable to obtain a post-mortem examination.

Soon after this occurred. I had occasion to discuss the case with a neurosurgical friend of mine and I said: "why was I unable to save this man?" He chuckled and remarked, "You probably would have saved him if you had opened the other side."

His feeling, of course, coincided with what was said today, and is a practical point that one trephine may not be adequate, and in all cases, if you don't find the clot that you know is there, you must certainly try elsewhere, there, or on the opposite side, or in different places on the same side.

The remarks made by Dr. Coblentz about the magnitude of scalp wounds are very good. I think any carelessness in this matter is inexcusable, because of the underlying chance of cranial infection. It gives the examiner a chance to examine the underlying bone to determine presence of a fracture or indriven bone fragment. There I think we should take advantage of the debridement of the bone, and it is important that an aseptic technique be the rule, without question.

The penetrating wounds of the skull, especially as in shell fracture, etc., we don't see often in civilian life, but when they do occur the first thing the family will ask is: "has the bullet been removed?"

I was favorably impressed by Dr. Coblentz' remarks that it is not of great importance to remove the body that is not causing damage, and I am certain others, as well as he, have seen damage occur from unwise removal of metallic bodies not causing damage. The removal of such bodies can sometimes cause severe damage. This does not mean that intracranial wounds should not be debrided, with the removal of the chronic tissue and ingrown bone fragments, or in-driven fragments. I recall one doctor said "a bullet which enters the skull is dangerous only so long as it is moving." Perhaps that is not entirely true, but certainly the bullet if not moving and not causing damage might better be left alone.

The habit of rushing patients from the scene of the accident right to the x-ray room is sometimes unwise, especially in those who have severe injuries other than their head injury. I have seen, on occasion, a patient in shock, being taken to the x-ray department for x-ray studies and the treatment of the shock being delayed or deferred. That, I think is something we should guard against because certainly our first concern should be the treatment of shock. It is also true that in the case of many head injuries shock is relatively slight or absent, and when we see a patient with a deep shock and having a head injury, we immediately look for other causes for that shock—a crushed chest, intrathoracic bleeding or abdominal bleeding, or injuries to the extremeties may be also associated with the head injuries.

I realize that Dr. Coblentz' discussion did not bear upon the sequelae of head injuries, but I would like to ask him to say something about one of these troublesome sequelae—the so-called post-concussion syndrome.

President Wagner: A great many of us are looking forward to hearing Dr. John W. Cline this evening in a prepared address. But since he is with us at this session, I would like to call on him now to make a few remarks pertinent to this subject.

Dr. John W. Cline (President, A.M.A.): Thank you, Dr. Wagner. I have enjoyed this very comprehensive paper and the pertinent remarks of the discussants. I don't believe there is anything that I can add to the discussion.

When I was resident surgeon at the Bellevue—a good many years ago, we confronted often the difficulty, as one does in public hospitals of a patient who had been drinking and had a head injury of some degree. It was necessary to differentiate as to whether the principal thing was the alcohol or the principal thing was the injury, and I think in many instances that still holds true. I would be very interested to have Dr. Coblentz enlarge upon that, if he has time.

The other thing that we found out at that time at Bellevue, and the thing we have used in San Francisco County Hospital is to insist that the hospital doctor record periodically a fairly complete neurological examination, because of the changes taking place are extremely important and the memory of man is extremely fallible. If an actual record has been made periodically, then the changes can be demonstrated. And looking back over the past 25 years it seems to me the principal advance made in the treatment of head injury has resulted from a great understanding of the actual pathological and physiological changes they produce and the restriction of radical procedures to the elimination of those particular conditions, rather than in the old days, when the subtemporal decompressions were done for increased intracranial pressures of one type or another where there was no specific pathology which could be dealt with.

President Wagner: Thank you, very much, Dr. Cline.

Is there any other discussion on this very interesting paper? If not, I shall call on Dr. Coblentz to close the discussion.

Dr. Coblentz: I was very glad to have Dr. Gordy and Dr. Preston emphasize the importance of proper treatment of scalp wounds and the prevention of infection, and also to emphasize the fact that all foreign bodies don't have to be removed, especially if it entails damage to brain tissue that is not adjacent to the actual damaged brain. Often a gunshot wound or fragment may be far displaced from the portal of entry. I have seen a lot of damage done in probing around even under x-ray, trying to take out a small foreign body at another point. I think judgment has to be used along those lines.

After the First World War there were plenty of foreign bodies left in, and the abscesses formed were all sterile, practically. Some had to be operated on.

The question of subdural hematoma in children I did not go into, because I think the treatment of cerebral trauma in children differs quite a bit from that in adults. They react differently. What might give an adult a headache, might give a child a convulsion. And with the proper control convulsive seizures I have seen the patient recover without any residual. That is not often seen in grown people.

The subdurals in children are very elusive. I remember a case of a child, a new-born, which had trauma at birth. The head started to enlarge and the child was referred to our clinic. We did subdural taps, the subdural fluid was slightly xanthochromic. And we felt the child had subarachnoid hemorrhage. We did tapping until the blood had almost cleared. In the meantime the baby's head kept enlarging. We couldn't act, for the reason there was nothing in the subdural space over the hemisphere and that the spinal fluid had practically cleared of blood. Through a very small incision in the scalp and a small opening in the bone we came down on the chronic subdural hematoma. The child was two weeks old by the time we got to it. It was a rare case and not often found in life but is found at autopsy. In fact, that was the only case I could find that had been found before death. There had been subdurals around the chiasm and around the base, but I think this was the only one in the posterior fossa. So it can happen there, but it is not frequent.

Dr. Cline brought up the question where you don't know whether the patient is drunk —you smell alcohol on his breath and evidently he has had a blow on the head. We treat the patients just as if they had never had a drink of liquor.

And probably a little more obvious and one of the things I didn't emphasize was a record on the chart of the progress of that patient, state of consciousness, paralysis, or any change in pulse or temperature, and that should be recorded, because in case of internes or nurses changing you just don't know, otherwise. Not only are you confused with those that come in with alcohol on their breath, but the patient may fall suddenly and strike his head and he comes in with a hypertension, at least you feel that he has such. You may not see him for two or three hours after the fall, and the increase in blood pressure may be due to the increase in intracranial pressure. That can be confusing at times. You can't tell whether there is a spontaneous hemorrhage or he had a stumble, or that the condition was due to cerebral trauma.

Way back some time ago we used to do spinal punctures of every case where we smelt alcohol on the breath, hoping that would bring him out of the alcoholic state, but you get into trouble doing spinal punctures on cases where that shouldn't be done. So our method is more observation on the fellow you feel is drunk and has had too much alcohol.

THE MEDICAL MANAGEMENT OF EPILEPSY*

Douglas T. Davidson, Jr., M. D.,**
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Epilepsy, that condition characterized by periodically recurrent fits, spells, convulsions or seizures, affects at least 800,000 persons in these United States. Epilepsy affects more individuals than cerebral palsy, infantile paralysis or active tuberculosis. Like infantile paralysis, epilepsy strikes down its victims in all classes of society and in all age groups, though three-quarters are first affected as children. Like infantile paralysis, it strikes strong as well as weak. Every business, trade, art or profession contributes its quota of sufferers from epilepsy so that the handicap, obviously, does not preclude superior intellectual or artistic endowment or achievement. And yet, what is too often the epileptic's place today? Stigmatized, isolated from normal social contacts, denied educational opportunities and all too frequently refused a chance to earn a living, he is driven to unwilling dependence on impersonal charity and is supported in idleness at the cost of millions of dollars yearly. At a very reasonable financial outlay to provide modern treatment and proper job training and placement, the majority of employable epileptics—two-thirds of all the adults—can be made productive members of society at a tremendous saving in dollars and with inestimable benefit to our society.

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When the facts about epilepsy are known to a reasonable number of our citizens, new and more rational attitudes on the part of the public will prevail and the toughest part of the problem will have been solved. At this point I would like to advocate support for the National Epilepsy League, a lay organization which is pioneering on the fight to stamp out superstitions and misconceptions about epilepsy by making the facts available to all. I fully acknowledge our indebtedness to Jackson, Gowers, Berger, Lennoe, Penfield, the doctors who, through their ingenuity, industry and devotion have contributed so brilliantly to our understanding of this age-old scourge and have made possible the magnificent advances in treatment. Finally, I would like to pay tribute to those parents of epileptic children and to those individuals who suffer from the disease who are courageously and clearly demonstrating to the world that epilepsy is not a mysterious, loathesome and almost supernatural condition, but only another one of life's many handicaps to be faced squarely and carried gallantly—not a catastrophe, certainly not the end of all hope for a full life.

Today, we physicians can determine the cause or causes of a patient's seizures and prescribe treatment that will materially decrease or eliminate seizures in eight of ten epileptics. However, the most satisfactory results are not always achieved at once and the adjustment of medication may require several months or, in some cases, several years. Even in those patients whose seizures are not controlled after prolonged treatment, medical progress and particularly in the case of children, time works for their advantage. In view of this favorable outlook for the overwhelming majority of epileptics and yet with the realization that the problem of living with occasional seizures will have to be faced by those whose seizures cannot be immediately controlled, we physicians have the additional responsibility of teaching patients how to live with their seizures while carrying on as full and productive a life as their natural endowments permit. Stopping a person's seizures is of little use if he has missed the chance for education for learning how to get along with people, if he has been forced into considering himself an invalid—a rejected and worthless member of society. We must spare no effort to support the patient's morale—to keep him swimming in the normal current of life.

What are the strictly medical services which his physician can offer the seizured patient? Obviously, the first step is accurate diagnosis of the cause or causes of the attacks. I shall not discuss in detail the careful investigation of the nervous system for evidences of damage, nor the inquiry into the family history for evidences of a predisposition, nor yet the estimation of the role of emotional factors in precipitating the seizures. I would like to point out, however, that only one laboratory examination—the electroencephalograph, an electronic amplifyer which makes a record of the brain's electrical currents—is capable of suggesting the diagnosis of epilepsy. X-rays, chemical determinations of the blood and even surgical exploration of the brain may disclose no abnormality and yet the electroencephalogram, abbreviated EEG, may demonstrate the characteristic abnormality with startling clearness. Only in the past few years, since 1945, has the electroencephalograph become widely available as a practical clinical test for the assistance of the average doctor. The electroencephalogram is useful in differentiating epilepsy from fainting or hysteria, in locating brain injury or tumor, in indicating the seriousness of the case, in suggesting the best drug to be used and in following the success of treatment. The electroencephalograph is to the treatment of epilepsy what the electrocardiograph is to treatment of heart disease.

Having made a diagnosis of epilepsy and evaluated the etiological factors, the physician then prescribes one of the six to eight medicines currently available for treatment of epilepsy. In general, the drugs can be divided into two groups—the first group composed of tridione and paradione, is effective against the petit mal type of seizure. Petit mal seizures, you will recall, are of three types—the absence or simple loss of consciousness lasting from five to 15 seconds with eyes open and staring or blinking, recurring many times during the day and usually affecting children. The second type in the petit mal group is the akinetic or drop seizure in which the patient instantaneously falls limply forward if sitting or to the floor if standing and recovers immediately. The third pattern of the petit mal group is the myoclonic jerk seizure which, in adults, usually involves one or a pair of extremities and, in infants, involves the whole body in a momentary shock-like contraction of the extensors or the flexors, producing a jackknifing or hyperextention of the body. In the younger age groups, these shock-like contractions may recur at 15 second intervals for a series of five to a dozen or more jerks.

The second group of drugs is useful in treating both the convulsive and the epileptic equivalent types of seizures. In this group are phenobarbital, mebaral, dilantin and mesantoin. The long established bromide is useful occasionally when other drugs fail but is generally too sedative in comparison with its anticonvulsant action. A new hydantoin, thiantoin, produced by Lilly, is said to be effective in this group of seizures, but recent experience has shown it to be toxic for the liver. A significant advantage over dilantin to warrant the risk. In the convulsive group of seizures is the generalized convulsion or grand mal and the focal convulsion involving only one extremity or one side of the body and that particular type of focal convulsion in which there is a gradual spread or march of symptoms—the jacksonian seizure. Epileptic equivalents or psychomotor seizures are characterized clinically by a trance-like state in which the patient often makes chewing or swallowing motions, drools and performs automatic movements if conscious though he has amnesia for the entire affair and often experiences headache or drowsiness following the attack.

The electroencephalogram may be extremely helpful in distinguishing between the petit mal type of seizure and the epileptic equivalent, or psychomotor type, for in the petit mal group the spike-wave complex spells the need for tridione or paradione and in the psychomotor group the spike discharge in the temporal region calls for the use of one of the hydantoins—dilantin or mesantoin as a rule. The electroencephalographic demonstration of a spike focus any place on the scalp may indicate the guilty area which is producing the sparks which periodically set off the generalized conflagration or convulsion.

In the following table, I have listed the most commonly used drugs and their top normal dosages.

Seizure Pattern		Age 1 yr.	Age 6 yrs.	Age 12 yrs.
Convulsive	Phenobarbital	2gr.	3gr.	3gr.
	Mebaral	3gr.	4gr.	6gr.
Psychomotor	Dilantin	1½gr.	4½gr.	6gr.
	Mesantoin	1½gr.	4½gr.	7½gr.
Petit Mal	Tridione	10gr.	20gr.	50gr.
	Paradione	10gr.	20gr.	50gr.

We usually start with about one-third to one-half the maximum dose and increase it, if necessary, and if tolerated by the patient. The total daily dose listed in this chart is given in several increments, usually after meals and at bedtime.

Tridione, paradione and mesantoin—three of the most valuable drugs for the treatment of epilepsy—are each of them capable of depressing the bone marrow, the most vulnerable elements of which are the neutrophils or polys and the platelets. It is, therefore, mandatory that blood counts be done at regular intervals on all patients receiving the newer drugs. We recommend a monthly white blood count and differential smear from which examinations the absolute neutrophil count can be calculated and the presence or absence of a normal number of platelets on smear noted. If the absolute number of polys is depressed to 2500 per cubic millimeter, the blood count is done at fortnightly intervals; and if the depression of the neutrophils reaches 1600 per cubic millimeter, the drug is stopped. We expect a return to normal in three or four days. If the neutrophil count falls below 1000 inadvertently, then we recommend the use of vigorous antibiotics therapy in order to prevent bacterial invasion of the system during the period of lowered body defenses.

All the anti-epileptic drugs are capable of producing a rash in certain individuals and mesantoin seems to be the worst offender in this connection. Fever and lymphadenopathy often accompany the measles-like rash of mesantoin. Failure to stop medication promptly in the presence of a rash from any of these drugs may result in exfoliative dermatitis and possibly in aplastic anemia or massive liver necrosis. The anti-histaminics will stop the itching which often accompanies the rash, but usually does not hasten the disappearance of the eruption which spontaneously fades in from 24 to 96 hours.

Painless swelling of the gums is produced in possibly half the patients who take dilantin, but rarely necessitates discontinuance of the drug. The only treatment which seems to help is faithful and skillful massage of the gums by the use of a toothbrush. In severe hyperplasia surgical excision of the excess gum tissue may be required, but this promptly recurs unless massage is carried out as soon as the gums heal.

Some degree of sedation is produced by massive doses of nearly all the anti-epileptic drugs, but especially by phenobarbital. Dilantin has the least sedative effect of all, but in young children produces vomiting in excessive doses and in adults ataxia, nystagmus or ambliopia.

We feel that medication should be prescribed continuously with a constant daily dose once the effective dosage is discovered and it should be maintained until at least six months after the last seizure and at that time, if the electroencephalogram has cleared up, the dosage may be cut in half gradually. Six months later, if seizures have not recurred and if the electroencephalogram is still normal, the other half of the medication may be gradually withdrawn.

It is important to explain to the patient at the beginning of treatment that the initial prescription is the one which is most likely to succeed in his type of seizure but that because his individual reaction cannot be predicted, other medicines may have to be tried. Rapport is usually improved if the patient is made a partner in the trial of medication, the doctor suggesting the drug and the dosage and the patient evaluating his reaction to the drug and the effect upon his seizures. Only one drug should be changed at a time and the change should be gradual enough and continued long enough for accurate observation of effects.

In summary then, we have discussed the magnitude of the problem of epilepsy and its unique position among handicaps posed by the stigmatization associated with it. We have outlined recent advances in diagnostic and treatment methods which if employed on on a wide scale could revolutionize the outlook for the overwhelming majority of our three-quarters of a million epileptics.

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Discussion

Dr. A. L. Ingram, Jr. (Wilmington): I would like to congratulate Dr. Davidson on a very stimulating and succinct presentation of an admittedly difficult subject. With the increasing strides and advances made it becomes increasingly more difficult to present the essential facts in an understandable form, and I think this has been accomplished most admirably this morning.

I was happy to note that Dr. Davidson made a statement concerning the teaching of patients to live with their seizure. As he noted, it often takes many, many months, even years, to be able to find the optimum dosage of the correct drug to control the seizures of the particular patient. It is during this time that psychotherapy can be most useful. However, all too often we neglect the psychotherapeutic aspects in the treatment of the seizure patient, which often gives rise to preventible psychiatric problems. Too often we are prone to prescribe a drug, tell the patient how to take it, and sit back and renew prescriptions. It would take but little more time to reassure the patient, to give him some understanding into the disease process, and some insight, and to have him thus reassured of being, as suggested, a "partner" in the effort to control his disease. This is probably no more true anywhere than in the problem of epilepsy for it is there that we are treating an individual as well as a disease.

I have one question I would like to ask Dr. Davidson, that is, in regard to the use of tridione and paradione in the treatment of the petit mal epilepsy—whether or not the one has been considerably more effective in controlling this type of epilepsy than the other in his experience. We have found relatively little success in the use of tridione and have had a very limited experience in the use of paradione.

Dr. M. A. Tarumianz (Farnhurst): I wish that the term "epilepsy" would be discontinued from our medical vocabulary. It is a misnomer. It doesn't state the fact that epilepsy, per se, is not a one-entity, or a one-type of disease. Therefore, Dr. Davidson in his presentation placed emphasis on the fact that the establishment of the diagnosis of convulsive seizures is a most important factor in the establishment of the treatment of such cases.

I believe if we consider very seriously that many children as well as adults have convulsive seizures and do not have epilepsy, per se, and that convulsive seizures are due to some other factors, diseases of the brain, the central nervous system, which can be diagnosed adequately with electroencephalogram studies, which has been a new tool in the hands of doctors, we must realize that we are very fortunate in this stage. For the past few years we have established a department for convulsive diseases at the Governor Bacon Health Center. It is your center in this state. Every physician has a right to refer a case for such study and a report will be immediately sent to the referring physician. In that way you can obtain a knowledge as to the cause or causes of the convulsive seizures—whether the individual has severe damage to the brain or the convulsive seizures are due to other factors which one did not think about at the time of considering the therapy.

I wish to again emphasize the fact that there is no reason for anyone to send a patient to any place outside of this state. We have a laboratory which is the State Laboratory. There we have the best facilities and well-equipped technicians under the guidance of a Philadelphia expert who assumes the responsibility of interpreting those tracings.

Again I wish to congratulate Dr. Davidson for his paper, as well as to invite him to stop at the Gov. Bacon Health Center and see the Department for Convulsive Seizures. And I should like to urge, while the President of the A. M. A. is here that we do something about changing our approach to convulsive seizures and try to eliminate the term "epilepsy", which has certainly done more damage to the emotions of our people than anything I know of. It is a sad story to anyone who has practiced medicine as long as we have—some 47 years—to realize what it means to the family, the children or adults who are handicapped with these "curses" as accepted by our nation, and, as a matter of fact, by humanity.

Dr. R. E. Reed (Delaware City): I have been on the staff of the Gov. Bacon Health Center for about two and a half years. I would say that the greatest advance that the state of Delaware has added to the science of epileptology is the concept, which as far as I know originated with Dr. Tarumianz, that a child with epileptic seizures is primarily a behavior-disturbed child, a maladjusted child, and that he belongs first probably in the province of the psychiatrist.

Of 175 mal-adjusted children we have there are about 75 in the epileptic children's service. They go on walks and play baseball, they go to the show, they go to the drama; when the children go off grounds they go to the horseshow and air show, they are brought to theatres and they go in our swimming pool. They do, in fact, everything all the other children do, and to look at them, and as far as they know, they are not any different from the other children there. And I think that is in most cases the first time in their lives they have been treated in such a way, and I suspect somehow such treatment is related to the fact that they don't seem to have any more convulsions.

Another thing we learned in this connection is that many of them are slightly undertreated by their doctors. The profession is becoming farther up-to-date in the drug treatment of epilepsy than previously. I know it all too well, because I look back with disgust on my early experiences and of course our training was always to use as little medicine as we could get away with. We have learned to use greater doses and then grudgingly and slowly reducing it down to the minimum, rather than to allow the child to

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go on with just too little medication and keep on having spells.

Dr. Davidson: The question about triodione and paradione. As to that I might say we couldn't run an epileptic clinic without these two drugs. We might be able to run an adult clinic where we would see very little petit mal, but in children the occurrence of petit mal runs between one-quarter and one-third of all our patients in one form or another, and without those two drugs we couldn't do a proper job.

Dr. Tarumianz has brought up a very real problem, the "sense of guilt" for the child's seizures, which completely warps the parent-child relationship. This sense of guilt is a very real one—it is not to be side-stepped by changing the name of the disease or by pretending that there is a more euphemistic name for it. But the question of guilt must be faced according to the reason for the parents' need and by educating a parent according to the modern concepts of a symptom complex.

We do not say that epilepsy is a disease: far from it. It is a symptom like headache and, like headache, has an infinite number of causes. The seriousness of the headache is no guarantee as to the seriousness of the cause. There is no correlation as to the seriousness of the cause, of course.

About Dr. Reed's comments. I am very happy to have him point out the importance of the emotional factors in precipitating convulsions in other types of seizures. The emotional factors may be all-important in many patients. They may be practically non-existent in others—but I think in every patient that we are evaluating we must take recognition of the fact that their seizures may not be only tremendously aggravated, but even impossible to control, unless we make some provisions to take care of the emotional disturbances which are present in that youngster. We are indeed fortunate, here in Delaware, in having a Center like the Gov. Bacon Health Center, where patients can be referred to electroencephalographic diagnosis. Such a diagnosis, in my opinion, for any patient that doesn't respond immediately to medication is imperative—or such an examination, is imperative. We can't treat patients intelligently without it, and we are very fortunate in Delaware to have these facilities available.

I think we are also lucky here in having a place like the Health Center, where children who are too ill to be handled at home can be referred and taken care of adequately. In some states there is no place to send such patients where there is too much strife or emotional upheaval in his home. Delaware is lucky to have such an institution.

CERTAIN ASPECTS OF SURGERY OF THE NEWBORN*

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To those who interest themselves primarily in the surgical problems of infancy and childhood, there seems to be no end to new ideas which can be developed in the operative and post-operative care of children, which lead to smoother convalescence, decreased morbidity, and lower mortality rates. In the field of pediatric surgery, however, the challenge still lies in the surgical management of those congenital anomalies which are incompatible with life, but which are amenable to surgical correction.

There are four such problems which might be included in this group without question. They are omphalocele, atresia of the esophagus with or without tracheoesophageal fistula, atresia of the bowel and imperforate anus. To this group I would also add meconium ileus and diaphragmatic hernia. Meconium ileus should be added because of the distressing mortality this problem carries with it about the country, and diaphragmatic hernia because its mortality, although not one hundred per cent, is so close to it as to be included in this series.

The management of omphalocele was moderately efficient as outlined by Ladd and Gross[1] some years ago, but an even superior method is that described more recently by Gross[2], wherein the membranes of the omphalocele are not dissected free, but rather are covered by skin which can be loosened from surrounding structures and stretched over the surface of the membraneous covering of the abdominal viscera. We have made but one slight improvement on this technique. In large omphaloceles where disproportion between the protruding viscera and available skin is great, it is possible to compress the abdominal viscera by rolling the membraneous covering in much the same way that one would roll down the top of a paper bag after bringing the two sides together, and then to approximate the skin edges while holding the viscera, thus tightly compressed. Omphaloceles extending from the xiphoid to the pubis, which otherwise might not be correctible by surgical means, can be closed in this fashion.

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** Surgeon-in-Chief, Children's Hospital.

In reference to problems of atresia of the bowel, recovery still seems to be proportional to the age of the patient, the surgical care exercised at the time of operation, and the excellency of post-operative care.

Meconium ileus, diagnosed early by the signs of vomiting, distention, viscid secretion, and shadows resembling feces on x-ray examination of the abdomen is being successfully treated insofar as the obstructive problem is concerned by a variety of surgical approaches with a decreasing mortality. Whether one performs a temporary ileostomy or resects the affected portion of the bowel, the use of pancreatic enzymes and preserved duodenal juice are of great help in establishing the passage of stools.

In the treatment of diaphragmatic hernias, we have abandoned the abdominal approach and routinely operate transthoracically.[3] In the thoracic approach it is possible to open the chest of a distressed infant in a matter of a minute or two, and to eviscerate the abdominal organs from the thoracic cavity, at which moment the baby becomes a satisfactory patient from the point of view of cardiac and respiratory reserve. The collapsed lung can expand, the heart is no longer compressed, and the mediastinum may shift back to its normal position. The surgeon need then be in no hurry, but can at his leisure replace the abdominal viscera into the peritoneal cavity through the diaphragmatic defect; the chest is then closed in the usual fashion after suturing the diaphragm, and the infant returned to his crib with a chest wound which he seems much better able to handle than a large abdominal wound behind which are more abdominal contents than the peritoneal cavity can conveniently accommodate. We have done fourteen diaphragmatic repairs by this technique with one death, and that in a child with premature ossification of the skull and subdural and epidural hematomas.

Having thus disposed of four problems with little more than a word, I would like to turn our attention to the two remaining problems: atresia of the esophagus, and imperforate anus, and outline a method of management for each which we have found satisfactory and which in each instance seems to be somewhat at variance with the usual techniques employed.

In the management of atresia of the esophagus our earlier method of management was that used by most, a retro-pleural approach through the posterior mediastinum, at which time the tracheoesophageal fistula was ligated and an end-to-end anastomosis carried out between the blind pouch above and the open esophagus below. On the day after this procedure a gastrostomy was done, feedings were delayed for a period of five to ten days, and frequently post-operative dilatations of the esophageal anastomosis were necessary in order to permit the passage of food through the sutured esophagus. This method of management had many faults. The operative procedure was long, it was difficult to stay out of the pleural cavity, the hospitalization was prolonged, and economic loss to the family was great. There was always the risk of regurgitated gastrostomy feedings, the need of two operations, and the delayed nutrition of the patient. Finally, the problem of esophageal dilatations and the occasional necessity for surgical closure of the gastrostomy was time-consuming. In addition, the patients frequently developed edema post-operatively, which in those children who died, at times approached a generalized anasarca. Under this technique we felt that we had done all that we could to improve our management, and the mortality was over fifty per cent.

At the present time, we have altered our method of caring for these children in this manner: instead of using a retro-pleural approach, we operate transpleurally and reduce the operative time from a period of two to five hours, to an average operating time of an hour and fifteen minutes. No gastrostomy is carried out following operation if we have reasonable assurance that the suture line is tight. On the morning of the second post-operative day the patient is fed glucose water and his formula is increased rapidly to something similar to that given to most newborn infants. By this method, not only is anesthesia and operating time decreased, but only one operation is necessary, hospitalization is shorter, the economic loss to the family is less, nutrition is maintained, and surprisingly enough, esophageal dilatations do not appear to be necessary as frequently as heretofore. Edema is now seldom seen because we maintain these children on no salt (except that contained in blood transfusions) for the first three post-operative days, and then limit fluids to approximately 60 cc. lb day.

If one excludes patients with a second anomaly incompatible with life and patients with multiple congenital defects, which in themselves carry a high mortality, the mortality is surprisingly low. Out of 20 such patients we have had 15 survivals. Four gastrostomies were done in this group and two patients needed dilatations of the esophagus. This method seems to us to be a rational approach to the problem of atresia of the esophagus, not only in the hands of the pediatric surgeon, but also in the hands of the thoracic surgeon who only occasionally deals with such problems. The risks are less, the procedure easier, and the results better.

The problems resulting from the improper management of imperforate anus have long been a burden to us. Because this is the most common of the congenital anomalies incompatible with life, a large number of surgeons encounter the lesion and operation is carried out by many unfamiliar with the end results of this variety of surgery. Most patients with imperforate anus are divided into two types: Those in whom the blind rectal pouch can be reached from below, and those in whom the distance between the anus and the colon is too great to be bridged by a perineal operation, in whom a colostomy seems the procedure of choice. This is a satisfactory classification of patients, but the selection of operative procedures for each is frequently unwise.

First, and most dangerous, is the common attempt to bridge too wide a gap between anus and colon by the perineal approach. When such is done it is possible to bring colon mucosa to perineal skin for a suture line, but this is done at the expense of nerve and blood supply to adjacent areas. Such suture lines, under great tension, do not hold, and there develops in a matter of days after operation a rectal canal surrounded by fat and muscle and lined with granulation tissue. This in turn becomes a tight, relatively long stricture which can make the patient a rectal cripple for the rest of his days. Not only are these strictures very difficult to correct but frequently their correction leads to incontinence. If they are not corrected, obstructive megacolon may ensue.

The second variety of mistake is made in those patients in whom a colostomy seems necessary. The colostomy is carried out in the sigmoid colon, thereby utilizing the redundant loop of colon which should be left free to provide bowel to construct pelvic colon, rectum, and anal canal at the time of definitive operation. These two errors can be eliminated by never attempting to bridge a gap between colon and anus which is greater than 1.5 cm., and when a colostomy seems indicated, by placing it in the right side of the transverse colon in order to leave as much distal colon as possible for use at the time of definitive operation.

We attempt to divide all of our imperforate anus cases into three groups as to operative procedure. First, patients with a blind gap of 1.5 cm. or less are approached through the perineum, and an anus constructed which usually has some sphincter. Secondly, patients who weigh less than four and a half pounds, or who present some other medical problem which contraindicates major surgery, have a colostomy performed in the right transverse colon. These two methods could be carried out satisfactorily in almost any community where surgery is practiced.

At the Children's Hospital of Philadelphia, we have added a third category of operation,[4] believing that we have sufficiently good anesthesia, nursing, and house officer care to warrant such type of work. Those with a gap between anus and colon of more than 1.5 cm. have a definitive operation carried out at the time of admission to the hospital. A combined abdomino-perineal type of approach is carried out with the abdomen being opened first and the blind end of colon secured and exteriorized. The patient is draped in such a way that one leg is outside the drapes and in the operative field. A small section of skin and skin only is excised from the region of the anus, the external sphincter cleanly divided, and a small hemostat is inserted into the perineal body. This aperture is gradually enlarged until it is possible to reach up into the true pelvis, and bring down through the perineal canal thus made the blind loop of colon and exteriorize it through the newly formed anus. These children are taken care of once and for all, and the only thing that remains to be done to them is to have the excess colon trimmed off by a very minor procedure just before discharge from the hospital.[5]

Patients of three days of age or less tolerate this extensive surgery without difficulty. It is of interest to note, however, that if such an operation is not carried out in this very early neonatal period, it becomes one of the most shocking procedures one can undertake in pediatric surgery, and therefore, by experience we have learned that if this cannot be accomplished early, one should do a colostomy and then at a later date, after the age of three or four months, perform the definitive operation by the combined abdomino-perineal approach just described. When patients are cared for by the three techniques outlined there should be no rectal strictures. Tight anuses can be dilated in infancy, resulting in a cosmetically acceptable anus, and a well-functioning lower bowel. Such patients take longer to train for stool habit than normal babies, but they usually can be made into satisfactory citizens from the point of view of bowel function.

I will not go into the many problems of fistulae between the colon and the urinary tract, which so frequently complicate this congenital defect. They can be managed satisfactorily during the procedures outlined. We have operated on almost forty of these youngsters in the last four years with one death and one failure. Several premature babies have died from other congenital anomalies before surgery was undertaken. The smallest baby we successfuly treated weighed two pounds, twelve ounces. None are now rectal cripples nor need look forward to that existence in the future. In the same period of time we have treated a large number of patients secondarily who had previous surgery at the time of birth, surgery which was not carried out according to the principles here stated. We think that the proper management of such patients could eliminate the very serious problems we see of fecal incontinence, megacolon and rectal stricture following surgery of imperforate anus.

We believe that much can yet be done to improve the technique of operative procedure and post-operative management of patients with atresia of the esophagus and imperforate anus. We realize that a low mortality rate in a small series of patients may be misleading and that we have had a particularly good succession of patients in both categories. However, we do believe also that some of the improved mortality is due to careful attention to detail based upon correctible errors of the past, and suggest that the method of management outlined for each of these conditions warrants trial in other pediatric installations.

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Discussion

Dr. R. O. Y. Warren (Wilmington): I am somewhat amazed to be asked to discuss a surgical paper. Dr. Koop is always a welcome guest to Wilmington. I, personally, would like to thank him for the courage he has displayed in these problems. As a mere pediatrician I cannot cope with the technical detail of Dr. Koop's paper, but I would like to point out one or two things that are somewhat alike or of a kindred nature, and that I think are equally important.

One is that anybody in this room or anyone in the state of Delaware, in fact, that has anything at all to do with young or newborn babies may see some similar condition in an hour, a night, next week, or maybe not for the next twenty-five years.

I see one confrere of ours sitting in the room that went an extraordinary length of time before he saw a condition akin to that of which the doctor has spoken, so the point I would make is that those general practitioners, pediatricians, obstetricians—anyone having to do with newborn babies—have to be on their guard and "on the ball". And from there on it is, in our community, at least, a team effort.

Dr. Koop makes it seem very simple—the surgeon just gets the baby to the operating room and he promptly and very expertly takes care of him! That doesn't say, of course, that there hasn't been a lot of preliminary study in some of these babies, and it doesn't say that the baby hasn't been prepared for operation, and isn't cared for afterwards.

So the other point that I would make is that in an average community such as ours the management of a case such as this, beside the expert skill supplied by the surgeon, is a team-effort in which a great many other people are involved. Strangely enough, I don't think we were all blind or completely dumb, consequently this did not seem to occur so frequently before the war as since. And we feel greatly interested in this, as pediatricians, and some of our surgeons here in town have become interested in this condition, too, and everything that Dr. Koop has said on a previous visit and today I feel is most worthwhile and extremely valuable.

Dr. H. H. Stroud (Wilmington): From the viewpoint of the practicing physician, earlier diagnosis of, and earlier treatment of the conditions mentioned by Dr. Koop will further decrease the too high mortality.

The omphalocele is obvious by inspection at birth. Too frequently operation is delayed until the integrity of the covering membrane is lost; then infection and peritonitis increase morbidity and mortality.

Esophageal atresia can be diagnosed when water is offered as the first feeding 8 to 12 hours after birth. After a few swallows the infant with atresia will cough and choke. The diagnosis is established by simply introducing a soft rubber catheter which will meet obstructions after being passed only a few centimeters. X-rays are unnecessary in most instances before referral to the surgeon. Too frequently such is offered the baby with atresia over a period of days before the diagnosis is made. Then the surgical problem is complicated by a lipoid pneumonia.

Meconium ileus and atresia of the intestine present similar symptoms. Vomiting occurs within a few hours to a day after birth, associated with abdominal distension and frequently peristaltic patterns can be seen on the abdominal walls. The diagnosis can be confirmed by instilling a few cc. of iodized oil in the stomach to observe its passage to the point of obstruction under the fluoroscope.

With diaphragmatic hernia respiratory distress is an almost constant finding. An early chest x-ray will reveal the underlying difficulty where the physical findings are in doubt or obscure.

Hence, the procedures required for the diagnosis of these congenital anomalies are simple and usually available to all. If the conditions are thought of, diagnosis is easy within a day or two of birth. The surgeon can operate when conditions are best and morbidity and mortality will be reduced.

Dr. Koop: In trying to keep within the time limit and cover the several points that I was particularly anxious to present in my paper, I want to make it clear that I didn't attempt to stress the diagnosis of these problems, and I did not mention the cooperation necessary for the care of these patients both before and afterwards with our pediatric confreres. I want to thank the doctors for completing the general problem that I tried to present to you.

I would like to stress several things which can not be emphasized too often. One is that the newborn infant has its mother's physiology for about three days, and during that time he is a better operative risk than he will be at any time for at least two weeks, and if one plots mortality against age, the mortality is about steady in the first 70 hours of life and then by the eighth day of life the mortality is so close to 100% as to be equal to it.

I would like to caution those having to do with the preoperative problems not to use barium. One thing that makes for difficulty is having barium in the tracheo-bronchial tree. Children having the problems mentioned here tend to vomit those things given by mouth.

Finally, although we have a pediatric-surgical service of surgeons who are trained somewhat pediatrically and manage their own problems to a great extent, in many other hospitals throughout the country surgeons have to do the technical work and pediatricians have to take care of the child's intake. We have found generally that almost all the patients need more fluid post-operatively than does the ordinary child, but can get by with less salt.

Finally, much of the success of the pediatric endeavor is due to the anesthesia available. The mortality, as low as it is in this surgery is due in great part to Dr. Margery Deming and her staff at Children's Hospital.

FICTION AND FACTS ABOUT LIPOTROPIC MEDICATION IN ATHEROSCLEROSIS

Otakar J. Pollack, M. D.,*
Dover, Del.

In want of a proven weapon against atherosclerosis, patient, physician and pharmacist reach out for any therapeutic measure described or suggested. They comb the literature for any hint of prevention, arrest, or successful reversal of vascular disease in man or in a laboratory animal.

It is a fact that rabbits and other rodents with induced prolonged or severe hypercholesterolemia commonly develop vascular alterations resembling human atherosclerosis. It also is a fact that prevention of hypercholesterolemia in a cholesterol fed rabbit will result in the prevention of cholesterol-atherosclerosis. It further is a fact that with spontaneous or artificial reduction of the rabbit's hypercholesterolemia to a normo-cholesterolemic state initial vascular lesions will undergo reduction in number and in degree.

It has been stated that rabbits with induced hypercholesterolemia can be protected from atherosclerosis by increasing plasma phospholipids. This is not a fact. The assumed preventive action of phospholipids has been ascribed to its ability to stabilize colloidal cholesterol. This is fiction. Phospholipids, namely lecithin, have a modest stabilizing effect on cholesterol sols *in vitro,* but no effect *in vivo.*

There is a mathematical relation between blood cholesterol and phospholipids in animals as in man. This ratio, whether expressed in milligrams or in milliequivalents per blood volume is altered in experimental animals with induced hypercholesterolemia, namely in chickens, along definite patterns. In patients with clinical manifestations of atherosclerosis this ratio is as often normal as it is altered. For that matter, hypercholesterolemia per se is as often absent as it is present in these patients, and where it exists it rarely approaches the degree noted in animals on a cholesterol diet. Moreover, in man, the phospholipid level fluctuates, as a rule, with the blood cholesterol level. Thus, it seems ill advised to promote therapeutically an increase of blood phospholipids, in human beings.

Still, for some time, various compounds known as lipotropics have been given to animals and human beings. Such therapy was and is based on the fictitious reasoning that it will regularly reverse the proportion between blood cholesterol and phospholipids and that it subsequently will influence atherosclerosis.

It is true that many substances enhance the phosphorylation of lipids: monomethyl-ethanolamine, dimethyl-ethanolamine, and ethanolamine alone, all are more effective in this respect than choline. While choline increases choline-containing phospholipids only, ethanol increases all phospholipids in the liver. The relation between the rate of lipid phosphorylation in the liver and the amount of lipotropic factors in the diet is not a simple one. As a matter of fact, all diets contain sufficient quantities of methionine, choline and ethanolamine for phospholipid synthesis. The crux of the matter does not lie with phosphorylation as such but with transmethylation. The dietary supply of transferable methyl groups represents a limiting factor for the synthesis of phospholipids in the liver. The formation of phospholipids in the liver becomes deficient where there is an increase in dietary substances competing for the methyl group (for example, guanidoacetic acid) or acting as metabolic antagonists of the methyl reception in the synthesis of choline (for example, diethanolamine).

The various lipotropics do not act in like

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[*] Pathologist, Kent General, Milford Memorial, and Beebe Hospitals, and Beebe Clinic. Published in Spanish and Portuguese in Sinopsis Medica International, 1:20-23 (April) 1952.

manner. Phosphorylation is enhanced if the medicated patient is on a low protein diet but inhibited by a high protein diet. Vitamin B 12 affects transmethylation more than other substances. The activity of inositol depends upon the absence of dietary fatty acids. Addition of choline to a high fat diet results in an increase of hepatic lecithin; choline added to a low fat diet has no such effect.

It is a fact that lipotropics affect the phospholipid content and the total fat content of the liver. Their administration results in an increased turnover of hepatic phospholipids, namely of lecithin. That they affect the blood lipogram is a fiction. To measure the efficacy of lipotropics by the cholesterol or the phospholipid blood level is impossible. To gear the medication to the ratio of the two blood lipid complexes is erroneous. In about one third of patients on lipotropic therapy the blood lipids remain stable, in roughly one third, the lipids decrease and in about another third there is an increase. Regardless of the dosage or of the length of treatment in man or animal, the cholesterol-phospholipid ratio is as often stable as it is altered in one direction or the other.

Reports that experimental atherosclerotic lesions induced by feeding a high cholesterol diet can be prevented or resorbed by choline or inositol belong in the realm of unadulterated fiction. The observation by one investigator that the mortality of patients treated over a three year period with choline after their first attack of coronary thrombosis and myocardial infarction was only forty per cent that of a control group not medicated with choline does not license another author to conclude that this mortality reduction was due to a reversal of atherosclerotic alterations resulting from the removal of vascular cholesterol by choline. Lipotropics do not remove cholesterol from the blood vessels. That's a fact. Neither do they remove cholesterol, free or esterified, from the liver of man or animals. That, too, is a fact. On the other hand, it is a chemically and histologically proved fact that lipotropics reduce the neutral fat content of the liver.

There is no doubt that many persons, especially those of advanced age, have functional and structural hepatic alterations. Many times, the hepatic deficiency is but slightly apparent or is non-apparent to the patient and the physician. Often, a battery of chemical tests including an electrophoretic blood protein assay are needed to detect the disorder. A liver biopsy might be required to diagnose organic diseases. Where the liver is damaged, administration of lipotropics is indicated. Such therapy furthers the feeling of well-being of patients, even so they are ignorant as to the nature of medication. The patient's subjective impression linked with improvement of the hepatic function objectively ascertained by sensitive laboratory studies are the criteria for evaluation of lipotropic therapy. The effect of lipotropics is transitory, only. The period of remission upon discontinuation of treatment varies from one person to another but will rarely exceed three weeks. Continuous treatment is warranted in these patients, or intermittent therapy with short intervals between medication, be this oral or parenteral.

The number of commercially available lipotropic products is large. Some products contain choline, others choline chloride, choline gluconate, choline dihydrogen citrate, or tricholine citrate. Some drugs contain choline combined with d-l-methionine and/or inositol. Still other products contain vitamin B^{12} as well. The concentration of the different ingredients varies from one product to another. The discrepancies in the recommended daily dose of these drugs are as wide as the variations in the proportion of the components. The proper combination and dosage could only be answered by systematic reevaluation of all lipotropics. One would have to administer each substance separately in varying dose and try all possible combinations of the known parts of the lipotropic spectrum on large series of animals with hepatic steatosis of comparable degree. Clinical evaluation on human patients would have to follow.

Not infrequently we hear the question whether lipotropics are of true therapeutic value in patients with atherosclerosis. Since we lack knowledge of the true mechanism by which lipotropics act and since we are reluctant to repeat the various concepts just labelled as fictitious we are apt to avoid a direct answer to the question. One might reply that these drugs are harmless. It is true that no side or ill effects have been reported from the use of lipotropics. That does not mean that no such effects were ever noted or that none will be observed in the future. The lipotropics are part of the vitamins. It took decades of widespread vitamin therapy to recognize the several hypervitaminoses.

Many manufacturers of lipotropic drugs add to choline, methionine, inositol and vitamin B^{12}, varying amounts of vitamin A, B^1, B^2, B^6, C, or E. Others also add rutin, calcium pentothenate, dextrose, thyroid substance, liver concentrate and desiccated liver. We are not certain that inositol by itself has lipotropic property, whether its activity is enhanced by choline, or whether inositol enhances the lipotropic action of choline. The addition of various vitamins and other substances further beclouds the picture and interferes with evaluation of lipotropics. This practice harbors some dangers because there are no valid criteria for dosage and discontinuation of therapy, especially as medication is left mostly to the patient himself. While the intake of thyroid substance—to select but one of the several ingredients encountered—is warranted in many aging patients, its administration certainly should be controlled by the physician.

The formulation of a scientifically supported concept of the lipotropic mechanism is most desirable. Such therapy is neither specific for atherosclerosis nor for hypercholesterolemia, or for hypophospholipidemia. However, it need not be supported by conjured reasoning. The reversal of hepatic steatosis and the improvement of the patients' well-being justify fully the usage of lipotropics, in spite of the lack of scientific criteria. Lipotropics should be prescribed for patients with atherosclerosis in whom there is evidence of liver impairment.

BLACK WIDOW SPIDER BITE

Casimir Vileisis, M. D.,*
Milford, Del.

Latrodectus mactans, the black widow spider, is found mostly in tropical and temperate zones of South and North America. In the United States it is found mainly in the southern states. The greatest number of patients bitten by the black widow spider, has been reported from California, but there are also reports of bites as far north as the New England states.

The female, which is most dangerous, is shiny black with spherical body, one to one and one-half centimeters in length, and has on the ventral surface an orange-red inverted hour glass marking. The male is much smaller, about one third the size of the female. In addition to the female markings, it has white stripes on the abdomen. Too, the male body is more elongated and has an orange dorsal stripe. When first hatched the female and male are identical in appearance, but later, during growth, they assume their respective characteristics. The male life span is shorter than the female. After fertilization of eggs, usually the female eats the male, especially when she is hungry.

The spider prefers dark, dry places, and is generally found close to human habitations. It also lives in woods, bushes, and fields. It likes protected places as under boards, under rocks, waste cans, shoes and clothes, and also across the seat openings of outdoor privies.

The web has no regular pattern, and also has a poorly developed funnel hiding area. During the daytime the spider usually remains out of sight in a protected corner. During the night or in darkness it is more active and is in open areas.

The black widow has a pair of hollow fangs connected to a pair of poison glands, which are located in the cephalothorax, just behind the eyes. The venom of the full grown female is more poisonous when she is distended with eggs. The poison sacs increase in size and the venom increases in strength as it grows to maturity. The entire body of the spider is reported to be inpregnated with the venom, even the eggs. The poison of this spider is more potent than that of a rattlesnake, taking equal parts.

The latrodectus mactans deposits in the bite a toxalbumin venom, a fraction of which produces paralysis of the ascending motor nerve endings. Gajardo states that latrodectus mactans affects mainly the central nuclei of the negative nervous system. He also thinks that the entire syndrome can be explained by the effect of the venom on the medulla bulb and the other parts of the brain. Several fatal cases are usually associated with pulmonary and cerebral edema, and persistant uremia with urinary retention.

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* Resident Physician, Milford Memorial Hospital.

The local reaction of the bite is slight. Usually there is a small slightly elongated pinkish spot with two insignificant openings. There is local or generalized edema. The syndrome of arachnidism, which follows the bite, has been observed in Milford Memorial Hospital during the past four years in five cases. One case was observed just ten minutes after the bite; other cases from two to nine hours after the bite.

The first case was a 21 year old white female waitress. When she put on a sweater one morning she felt an acute sticking pain in the left elbow region. At first she thought it was a needle, then she felt an insect. After removing her sweater she saw a spider. Ten minutes later she was in the hospital dispensary. Locally, on the left elbow region, there was a small urticaria-like skin elevation with two small bite dots. There was no pain at that time. About twenty minutes later the patient started complaining of cramp-like pains in upper arm and shoulder. Forty-five minutes after the bite the patient was complaining of pain in upper part of the back. About thirty minutes later she complained of severe cramp-like pains in her abdomen, especially in the epigastric region. At that time there was slight nausea.

The first examination was made upon arrival, but no significant findings, except the previously described local reaction. Second examination was about 20 minutes later, showing some tenderness in the upper arm. The muscles were more rigid on the left side than on the right. The neck and abdomen were entirely negative. The third examination was done about two hours after arrival. Temperature 98F. P 80, R 20, B.P. 110/70. Eyes: pupils equal; react to light and accommodation. ENT: negative. Neck: slight nuchal rigidity was present. Chest: There was muscular stiffness around axillary and pectoral region on the left side. In the back there was some soreness in scapular region and around the upper part of the thoracic vertebra. Heart and lungs were negative. Abdomen: not distended. There was some muscular rigidity, especially in the epigastric region, but very slight tenderness. Extremeties: the left arm was painful to move and muscles were slightly contracted. Neurologic: Reflexes were slightly exaggerated. She was complaining of slight headache. Laboratory tests three hours after bite: Urine: neg. Blood: RBC 4,900,000; WBC 7,050; HG 95%; color index .97; Schilling segs 61; lymphs 33; stabs 9: juveniles 1: baso 1.

The other four cases came to the hospital with fully developed symptoms. All complained of severe abdominal pain and of spreading pain from the bite side. A three year old boy was bitten on the penis in an outdoor privy. He was brought to the hospital nine hours later. He was very restless and the abdomen was board-like, resembling an acute surgical abdomen. A 66 year old white female had similar agonizing pain and abdominal rigidity. She was brought to the hospital two hours after being bitten on the left thigh, also in an outdoor privy.

The fourth of our cases was a 29 year old white man who was bitten on the neck six hours before admission while working in a garage. His chief complaint was severe pain in the neck and chest, and agonizing pain in the epigastric region.

The fifth case was known after the patient expired when additional history was given by the family. While not clear, it was suspicious, indicating that the patient had been bitten by a black insect in a privy about 48 hours before admission. This patient was 66 years old, white male, sick for several years with hypertension and anemia. He was admitted to the hospital in poor general condition. History was difficult to obtain, but his chief complaint was abdominal pain and cramps in lower extremities. Also, he had a headache and stiffness in the neck. On the death certificate the cause of death was given as uremia.

The study of the symptoms of black widow spider is very confusing. Many such cases are sent to the hospital as surgical emergencies, and the differential diagnosis must rule out the numerous causes of acute abdomen, but especially of ruptured peptic ulcer, renal colic, acute appendicitis, peritonitis, cholelithiasis, acute pancreatitis, food poisoning, and acute enteritis. The most confusing and the most important is differentiation from ruptured peptic ulcer. In ulcer cases usually there is no history of an insect bite, but there is a typical ulcer history of acute knife-like pains in the epigastric region, collapse, subnormal temperature, rigid abdomen, pale grayish face, and by x-ray an airbubble under the diaphragm. In comparing black widow spider bite, besides the history of the bite, the pain spreads from the area of the bite to the abdomen. Also there are symptoms of generalized muscular pain and spasm, emotional instability, hypersensitivity of reflexes. Quick response to the treatment for latrodectus mactans bite will confirm the syndrome of arachnidism. Laboratory tests are of very little value in these cases. There is usually a slight leucocytosis and slightly increased polynuclear count, but there is no noted increase of eosinophils. Urine is usually negative. Only in extremely severe cases are found albuminuria, casts, and an increase of RBC. Some authors tells of increased blood urea in terminal cases.

Advocated treatments for black widow spider bites have been many. First and most important is the use of specific antivenom. Antivenom should be used as early as possible after the bite: delayed treatment does not give good results. We were giving a single dose of 2.5cc of "lyovac" antivenom (latrodectus mactans), a Sharp & Dohme product. In our first case antivenom was given one-half hour after the bite, two hours, six hours, and nine hours. In the first case comparatively mild symptoms developed. About 16 hours after the bite the patient had no specific complaints. In the second case, pains subsided within one hour after antivenom was given. In the two other cases symptoms subsided very slowly, and active additional therapy was required.

10cc of 20% sol. of magnesium sulfate or 10cc of 10% sol. calcium gluconate by intravenous injections gives prompt but temporary relief of pain. It is best to alernate both drugs, which we did in one case with good results.

The use of morphine and other opiates in combination with atzopine does not give the expected good results, but is valuable to fight restlessness. Bell and Boone and Beck are reporting good results by the use of 2cc of 1:2000 neostigmine methylsulfate alone or in combination with atropine sulfate gr. 1/150 to counteract the muscarinic effects of neostigmin.

When there is neck rigidity and severe headaches, lumbar puncture has been suggested as a method of affording some relief. In certain cases hot baths give some additional relief.

Local treatment of incision and suction has been tried by some authors, but this procedure is generally of no value, as the toxin is very rapidly absorbed. Hartinger reported good results using locally gauze saturated with 5% solution of gold chloride. Some mention using iodine and ichthyol locally.

Prognosis is favorable, considering the high toxicity of the venom, but there are reports giving a mortality rate of two to three percent. In our five cases there was one death, but here the diagnosis was questionable. Factors affecting the prognosis are age, health, and location of the bite. Alcoholics and syphilitics appear to experience more serious consequences than healthy human beings.

Immunity, according to D'Amour, is acquired slowly, after repeated injections of the venom. Several bites in one individual, with diminishing reaction of arachnidism, is recorded.

Protective measures include fine mesh screenings to keep out insects. Use mosquito netting when sleeping outdoors. Inspection of sleeping bag and clothes may be considered as a valuable prophylactic measure. Spraying with crue oil alone, or with a mixture of creosote will destroy the spider. Powdered unslacked lime and kerosene will kill the adult spider in about thirty minutes. All webs, spiderlings, and eggs should be destroyed by careful spraying or burning. It is very important to thoroughly spray outdoor privies and to inspect them before using again. Outdoor privies are considered one of the most common places of black widow spider infestation. The most efficient natural enemy is reported to be the mud dauber wasp.

The ability of the physician to recognize and to quickly relieve the symptoms of arachnidism is especially life-saving to very young children and the aged.

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Dr. Springer Honored

Dr. Harold L. Springer of Centerville was honored for his 50th year in medical practice by his friends and colleagues at a testimonial dinner recently at the Du Pont Country Club.

Dr. Springer was presented with a gold desk clock, given on behalf of those present by Dr. Sylvester W. Renie. Dr. G. W. K. Forrest was toastmaster.

Talks in tribute to Dr. Springer were given by Dr. George Wilson and Dr. Thomas Kline of Philadelphia. Dr. Springer told some of his experiences in medicine.

About 75 Delaware physicians attended, including his staff associates at the Delaware Hospital. Dr. Springer is a consultant in the surgery division and a former chief surgeon.

Among those at the dinner were Dr. Springer's brother, Willard Springer, Jr., president of the Industrial Trust Company, and his two sons, Harold L. Springer, Jr., and William L. Springer. William C. Northrop, a member of the board of the hospital, also attended.

Dr. Springer was graduated from the Wilmington High School in 1898, and received his degree of M. D. from the University of Pennsylvania in 1902. After a two-year interneship at Presbyterian Hospital, Philadelphia, he established a practice in Wilmington in 1904.

Horse Sense

Something possessed by horses that keeps them from betting on people.

BOOK REVIEW

Clinical and Roentgenologic Evaluation of the Pelvis in Obstetrics. By Howard C. Moloy, M. D., Assistant Clinical Professor of Obstetrics and Gynecology, Columbia University. (American Monograph Series) Pp. 119, with 68 figures. Paper. Price, $2.50. Philadelphia: W. B. Saunders Company, 1951.

One of the important problems of obstetrics today is difficult labor. Because disproportion is the chief cause of difficult labor, many attempts have been made in the past to devise methods to detect this condition.

In 1933, following much clinical and x-ray study of the female pelvis, Caldwell and Moloy devised a classification based upon morphological lines and included four parent types and numerous mixed types.

In this monograph the author has described the variations in the female pelvis which are of obstetrical significance and has correlated these with their effect on labor. He has shown how, by clinical and roentgenologic methods of examination, the various abnormalities may be recognized and dealt with.

This monograph is recommended to the medical student and every physician who does obstetrics. It can well be read with profit.

A Simple Definition

The "Gulf Breeze" house organ of the Gulf Insurance Company of Dallas cites the following definition as found in Britain's Health Act: "The expression 'infectious disease' means primarily any disease included in regulations under Subsection 1 of Section 29, whether absolutely or by definition of a particular stage of such disease, but in any section of Part IV of this act from the application from which a disease or a stage of disease is excluded under Subsection 2 of said Section 29, the expression does not include such disease or such disease in such stage as the case may be." Everything clear now? (*The Insurance Record*).

Three out of four traffic accidents happen in clear weather on dry roads.

Male drivers in 1951 were involved in 90 per cent of all U. S. auto accidents.

Saturday is the most dangerous day of the week in traffic.

The hour from six to seven p.m. is the most dangerous of the day or night in traffic.

Editorials

DELAWARE STATE MEDICAL JOURNAL

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Footnotes and bibliographies should conform to the style of the Quarterly Cumulative Index Medicus, published by the American Medical Association, Chicago.

Changes in manuscript after an article has been set in type will be charged to the author. The Journal, pays only part of the cost of tables and illustrations. Unused manuscripts will not be returned unless return postage is forwarded. Reprints may be obtained at cost, provided request is made of the printers before publication.

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Vol. 24 June, 1952 No. 6

The New Roster

With the May issue of The Journal there was sent to every one of the 335 members of the Medical Society of Delaware a copy of the New Roster. As stated thereon, we are quite certain it contains some (we hope only a few) errors. Prompt corrections are sought *in writing,* together with additions and changes as they occur. On the back page is provided space for additions for the next two years, which will be published in The Journal from time to time. Keep your copy of the Roster up to date: use a typewriter, as the calendered paper does not take ordinary ink very well.

On account of the high cost and the comparatively few additions and deletions each year, the Roster is published biennially. Even then it requires four months of exacting work, but it winds up the most complete and informative Roster that we have yet seen issued by any state medical society.

It takes only a momentary glance to realize that our membership contains a very high percentage of specialists, meaning 169 are full-time and 23 more are part-time specialists; or 50.4 and 6.8 percent respectively, making a total of 57.2 percent, and leaving only 42.8 percent of our members to work as general practitioners. Serious students of our American medical services have been saying for years that our profession is over-specialized: this new Roster seems to confirm that criticism. These same students indicate that the optimum is about one-third specialists and two-thirds general practitioners.

The W. A. Donates

The Delaware campaign for contributions to the American Medical Education Foundation, under the direction of Dr. C. L. Hudiburg, is beginning to show results. The individual doctor is being asked to make any donation to his own alma mater via this new A.M.E.F., in order to encourage contributions from non-medical sources. For full details see the editorial in The Journal for February, 1952, page 55.

We are now informed that the Woman's Auxiliary of the Medical Society of Delaware and of the New Castle County Medical Society have each contributed $100 to this Foundation. We hasten to say that these generous gifts evoked for these Auxiliaries our admiration and our sincere thanks: they are very much appreciated. Last year the National Auxiliary gave $10,000 to the A.M.E.F., and set the pattern for the State and County Auxiliaries. Good work!

Voting Records of Candidates

Senator Robert A. Taft, (R), Ohio—One of medicine's staunchest friends in the United

States Senate. He is campaigning vigorously against Socialized Medicine and all forms of State Socialism. He voted *against* Reorganization Plan #1 which, if not defeated, would have created a Cabinet position for Federal Security Administrator Oscar Ewing.

General Dwight D. Eisenhower, (R)—He has made no public statement as yet on the issue of Compulsory Health Insurance or Socialized Medicine. He has spoken out against some socialistic proposals, but his leading backers in the Presidential race include several so-called "Fair Deal Republicans" whose position on the medical issue is at least questionable. General Eisenhower's position may be clarified within the next few weeks. In this regard, yesterday Senator Dirksen (R), Illinois, cabled Senator Lodge (R), Massachusetts, who is at Eisenhower's headquarters, asking that he get Eisenhower to make a public statement on eight key National issues. On our issue, Senator Dirksen specifically asked: "Is he (Eisenhower) for or against Socialized Medicine?"

General Douglas A. MacArthur, (R)—Outspoken opponent of Socialized Medicine, Government controls and all socialistic proposals.

Harold E. Stassen, (R)—Mr. Stassen took a strong position against Socialized Medicine in a series of articles written for The Reader's Digest in January and February of 1950, following a trip to England and a study of the British system.

Governor Earl Warren of California, (R)—A constant and determined advocate of Compulsory Health Insurance, even though he denies that this is Socialized Medicine. Governor Warren caused Compulsory Health Insurance legislation to be introduced at the 1945, 1947 and 1949 sessions of the California State legislature and fought vigorously, but unsuccessfully for its enactment. He has become a bitter critic of the medical profession and, if elected President, undoubtedly would sponsor National Compulsory Health Insurance legislation similar to that advocated by the Truman Administration. He has also said in recent addresses that he favors virtually all of the New Deal legislation enacted during the past 20 years, but feels he could administer the program better than the Democrats.

Senator Estes Kefauver, (D), Tennessee—In a letter to Dr. R. B. Robins of Camden, Arkansas, a member of the AMA Coordinating Committee, dated January 30, 1952, Senator Kefauver said: "As you know I have heretofore taken my position against the medical bill that is now in Congress. I don't want anything to happen that may bring about Socialized Medicine." Senator Kefauver, however, voted *for* Reorganization Plan #1, which would have made Mr. Ewing a Cabinet member, and has supported some other aspects of the New Deal program.

Governor Adlai E. Stevenson, (D), Illinois—The current issue of Newsweek (April 14, 1952) carries an interview with Governor Stevenson, dealing with major National issues. He was asked the question: "Do you favor compulsory national health insurance?" His answer, according to Newsweek, was: "Basically, the problem is how to lift people over the costs of major illness. I don't know whether voluntary plans can do the job. I think the new commission on medical needs may well add some light and remove some heat, enabling us to find a satisfactory solution to this perplexing problem."

Senator Robert S. Kerr, (D), Oklahoma—He voted *for* Reorganization Plan #1, which would have given Oscar Ewing Cabinet status, and has generally favored New Deal socialistic legislation.

Senator Richard B. Russell, (D), Georgia—An outspoken opponent of most socialistic legislation; he voted against Reorganization Plan #1.

Senator Harry F. Byrd, (D), Virginia—A vigorous opponent of Socialized Medicine and all forms of Socialism. He addressed the Los Angeles Mid-Winter meeting of the AMA on this issue, December 5, 1951.

Vice President Alben Barkley, (D)—He has supported most of the Fair Deal program. To the best of our knowledge, he has not taken a public position on Socialized Medicine.

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SURGERY AND ANTIBIOTICS

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Wilmington, Del.

It is most important to use antibiotics singly and rather sparingly, rather than in a shotgun manner and without selection for their specificity. This cannot be over-emphasized.

Nearly all of the antibiotics produced by the various pharmaceutical houses have been incorporated in ointments, lotions, troches and other topical forms. It is often easy to cure a simple skin eruption or abrasion with one of the valuable antibiotics such as aureomycin, penicillin, terramycin or the sulfa drugs, but one must think carefully before doing so, because it is a well established fact that sensitivity or allergy to these substances is more easily and quickly produced when used topically than when they are taken orally or parenterally.

Many of the younger physicians and surgeons were not acquainted with surgery prior to the days of antibiotics, and are perhaps not aware how drastically surgery has been revolutionized by them. Unfortunately some surgeons have become lax in their respect for surgical technique as well as some of the dicta and principles evolved prior to the antibiotic days, relying upon the bacteriostatic and bacteriocidal powers of the "wonder drugs." Needless to state, meticulous surgical technique still is of primary importance and produces the best surgical results.

Some examples of conditions, the treatment of which has been revolutionized by the antibiotics, are as follows:

1. Most cellulitides, which formerly were difficult to treat and often lethal, are now readily controlled and seldom ever come to surgery. For instance:

a. Carbuncles, especially around the face and neck, used to comprise a large part of an operative schedule and caused numerous deaths. Surgical excision left disfiguring defects which had to be covered with massive grafts.

b. Erysipelas was a dreaded cellulitis which took a heavy toll of life and helped to fill contagious wards. Likewise, the erysipeloid secondary infections, so frequently associated with epidermophytosis and elephantiasis.

c. "Woody Phlegmons" were in common parlance whereas now one scarcely hears the term. Pelvic and retroperitoneal phlegmons were especially common and refractory. Ludwig's angina (celluitis of the floor of the mouth) was estimated variously as carrying a mortality anywhere from fifty to ninety per cent.

d. Hand infections and tendon sheath infections dragged out for weeks and months, leaving tremendous permanent disabilities in their wake.

e. Deep cervical abscesses were dreaded cases and frequently tragically fatal.

f. Nasal furuncles and cellulitides led to fatal thromboses of the cavernous and lateral sinuses.

2. Gas Bacillus (clostridium, welchi, oedematiens, septique, etc.) infections caused death of numerous patients, especially in wartime, in spite of the antisera, which were usually ineffectual. Within two years or less after the advent of penicillin, the U. S. Army in North Africa and Italy abandoned the use of the antitoxin and reduced the mortality due to gas bacillus to a minimum with penicillin alone, plus radical surgery.

3. Osteomyelitis was seldom cured permanently and immediate radical surgery has now been rather generally abandoned in favor of conservative treatment with antibiotics, followed by surgery as indicated.

4. Pyelophlebitis (thrombosis of the portal vein) was invariably fatal, whereas now we seldom hear of it. This is not to be confused with the ordinary thrombophlebitis of the ex-

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tremities which shows little or no response to antibiotics, unless it is secondary to an infection.

5. Lymphopathia venereum and granuloma inguinale yield ordinarily to aureomycin and terramycin if treated early.

6. Intestinal surgery has reached a perfection never hoped for, due to antibiotics. Safer multiple-stage operations are now being replaced by one-stage operations, with end-to-end anastomoses.

The emergency associated with appendicitis is on the wane and we may frequently observe a doubtful case for twenty-four hours before operating, thereby avoiding many needless operations. Peritonitis, abdominal drainage, peritoneal contamination, etc., are treated more adequately and the results are better. Septicemia is seldom encountered in the surgical field; multiple abscesses throughout the body are not known to the average young surgeon.

7. Skin grafting is usually successful now, due to the ability to sterilize (or nearly so) the recipient site prior to operation, and to reduce most of the postoperative infection. Even pseudomonas aeruginosa (pyocyaneus) can often be kept under control with polymyxin.

8. Postoperative pneumonia now is no longer a threat, comparatively speaking. Some facts regarding new wide-spectrum preparations:

Neomycin sulfate (Miciguent, Upjohn): is manufactured as ointment in grease and water miscible bases. It remains stable for one year at room temperature and has a wider range than bacitracin, streptomycin or penicillin with gram-negative and gram-positive organisms. It is generally effective against B. proteus and pseudomonas organisms, but not against mycobacteria and fungi. It is especially good for impetigo contagiosa.

Polymyxin B sulfate (Aerosporin, Burroughs-Wellcome): It is soluble as the acid salt in water and saline, and is stable two months, at room temperature. It is especially effective against pseudomonas (pyocyaneus) and B. proteus, as well as E. coli and, when taken orally, against bacillary dysentery. It is toxic to the nervous system (not permanent) and to the kidneys (albuminuria). Very little is absorbed when it is taken orally.

Terramycin: Has a wide range spectrum and is effective with gram-negative and gram-positive bacteria, anaerobes as well as aerobes. Also with the spirochetes, rickettsiae, and some viruses. It is very stable, lasting two months at room temperature. It is readily absorbed from the gastro-intestinal tract and is distributed widely in tissues and fluids, including the sputum, bile and foetal circulation. Both aureomycin and terramycin have been prepared for i.v. use as a sodium salt (500-750 mgm. in 24 hours in divided doses).

Compenamine: (l-epenomine Penicillin G.) A new hypoallergenic penicillin salt can be used when ever penicillin G is indicated. (Longacre, 2000 cases with one per cent reaction.)

Viomycin: Experimentally for mycobacteria.

Prophylaxis: Many antibiotics are used routinely with surgical procedures as prophylaxis against the chance of infection, even in clean cases. There is argument and logic on both sides unless the surgeon allows his technique to slip due to a false feeling of security from the antibiotics.

Preparation of intestine for surgery: The aim is to cut the intestinal flora down to 100 viable organisms per gram of feces. The best antibiotics are those least absorbed from the gastro-intestinal tract, e.g., streptomycin, bacitracin, neomycin, sulfa drugs (sulfasuxidine, sulfaguanidine, succinyl sulfathiazole and sulfathalidine), and the combination of penicillin and streptomycin.

Neomycin is recommended by E. J. Poth, (1951 *Southern Medical Journal*), in combination with sulfathalidine. If given with castor oil, it prepares the intestines in forty-eight hours; the major portion passes in feces. Of late there have been opponents who claim that the reduction or destruction of the intestinal flora reduces absorption of B and C vitamins and thereby affects protein metabolism. Large doses of vitamin B and C must be given orally with them. Many one-stage operations embracing the all-or-none gamble of resections with end-to-end anastomoses without proximal decompression, are coming back into vogue because of the reduced danger of a leak and the fatal consequences thereof.

It must be remembered that when a new antibiotic appears one encounters very few drug fevers and reactions at first, but in a comparatively short space of time the reactions manifest themselves as a result of the improper and needless "waste" of these drugs on minor ailments which are not life-threatening. Due to the lack of time allotted me and rather than go over the many diseases and surgical conditions which the above are successful in suppressing, I will pick out a few specific ones which might not be so well known:

1. Warts (verucca vulgaris): in children, in many cases yield to 250 mgm. of aureomycin twice daily for four weeks.
2. Herpes simplex: is frequently improved by aureomycin ointment (3%).
3. Herpetic stomatitis: responds to aureomycin and not to penicillin. It is given both orally and as troches.
4. Lympopathia venereum: responds to aureomycin and apparently to terramycin if given early. Lymphogranuloma inguinale responds well to terramycin.
5. Anthrax: Results with penicillin are good; occasionally aureomycin is effective.
6. Clostridia: Penicillin seems to be specific.
7. Actinomycosis: Penicillin and sulfa is still the best. Streptomycin and para-amino salicylic acid give good results.
8. Leprosy (Hansen's Bacillus): Streptomycin and sulfa is best, or chaulmoogra oil and sulfa.
9. Protozoan infections:
   Amoebiasis: Good results are obtained in some cases with terramycin. Aureomycin is most effective. Results are not good with the helminths and flaggellates. In 240 patients Endomoeba histolytica disappeared in all after the use of 2 grams of aureomycin daily for ten days.
10. Viral hepatitis: Nothing has been found effective, including chloromycetin.

THE USE OF ANTIBIOTICS IN NEUROSURGERY

P. D. Gordy, M. D.,*
Wilmington, Del.

Neurosurgery, in common with almost all other branches of medicine, entered a new era with the advent of antibiotics. Certain aspects of the surgical treatment of diseases of the nervous system have been altered dramatically. The morbidity and mortality rates in intracranial suppuration have decreased. Neurosurgery is a specialty which is young enough so that a young neurosurgeon may span this changing period in his own experience. A caution must be raised and that is that no antibiotic yet devised will overcome improper and careless surgical technique. Asepsis, careful handling of tissue, and removal of devitalized tissues remain the cardinal points.

This change is attested to as much by the things which we no longer see as by those which we see and treat. Osteomyelitis of the skull, brain abscess, and suppurative sinus thrombosis are now relative rarities. This is related to the early use of antibiotics in otitis media, lung infections and paranasal sinus infections which prevents, in large measure, the development of these suppurative intracranial complications.

Brain abscess has long been a dreaded intracranial lesion, regardless of what technique may have been used in removal. The mortality rate in metastatic abscess from the lung was 70-100 per cent; in those extending from the sinuses or mastoid it was 50 per cent. In addition to these formidable figures, there was the figure of 50-70 per cent incidence of convulsive disorder occurring in those patients who survived. This complication resulted from the thick contracting scar left after drainage and herniation of the abscess capsule.

The change in outlook for the patient with an abscess of the brain, whatever its source, is one of the dramatic events of modern medicine. As Jacques LeBeau expressed it: "The two events in the last ten years which have changed the treatment of brain abscess are the use of penicillin and the total removal of the abscess".

Total removal of the abscess, which is now the treatment of choice, is a direct outgrowth of the use of penicillin. This treatment was first reported by LeBeau from LaPitie in Paris in 1946. The abscess is localized, and is then tapped. After withdrawal of the pus, penicillin is instilled into the cavity. This may be repeated several times until the capsule is small and shrunken and the interior sterile. Removal is then a relatively simple procedure. The preoperative period of antibiotic therapy may last 7-10 days if there is no deterioration in the patient's condition.

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Ventriculitis, a 100 per cent fatal complication of abscess removal in the pre-antibiotic days, may be brought under control quite readily.

Combined therapy with one of the sulfa drugs or with other antibiotic preparations may increase the effectiveness of treatment. Sensitivity determinations or the material evacuated from the abscess cavity may aid in the selection of the drug.

The overwhelming nature of these infections may require that the intrathecal route be used, as well as the intramuscular. Care must be used that small doses in proper dilution be used since a severe arachnoiditis with root irritation may result from a too concentrated solution. This is particularly true in the use of penicillin locally because status epilipticus may result from penicillin which is applied directly to the cortex.

It appears certain that the use of heavy antibiotic therapy may, in some instances, prevent the development of an abscess by halting the process at the stage of diffuse encephalitis before tissue breakdown has taken place.

Tuberculoma of the brain may act as a tumor mass and require surgical removal because of increased intracranial pressure. There is an ever present danger of a fulminating spread. The use of streptomycin intramuscularly, and into the ventricle, may prevent a fatal outcome. The addition of streptomycin by the intraventricular route may be a valuable aid in treating tuberculous meningitis in addition to the intramuscular and intrathecal routes.

There are many additional uses for antibiotic therapy in neurosurgery. Among these are the use of penicillin in skull fractures which are compound, either to the outside or into one of the paranasal sinuses. Cerebrospinal rhinorrhea with its danger of developing meningitis may be successfully treated with penicillin until the leak has sealed. This permits many fistulae to close spontaneously which would otherwise have required surgical closure.

The placement of foreign bodies within the spine and cranium such as tantalum plates, polyethylene tubes, and rubber catheters is facilitated by the use of antibiotics and prevention of infection.

This brief summary gives some idea of the change brought about by the antibiotics in certain neurosurgical conditions.

ANTIBIOTICS IN ORTHOPEDIC SURGERY

Walter L. Bailey, M. D.,*
Wilmington, Del.

Hematogenous Osteomyelitis. On the view box are several films. To your left is a film of an old chronic suppurative osteomyelitis. The history dates back thirty odd years. His limb was finally amputated. The second film represents the same disease, but in a different patient. He had the benefit of antibiotics. A one year follow-up on the patient treated by antibiotics is seen in the last film.

It is not difficult for anyone to detect the striking difference between the first and third films. This is the difference between hematogenous osteomyelitis treated before and after antibiotics.

Early diagnosis of hematogenous osteomyelitis is essential for success in treatment. It is made on the basis of xrays, positive blood cultures plus history and physical findings. Suspect highly a diagnosis of rheumatic fever. When it suppurates, it is no longer rheumatic fever.

The once chronic picture of hematogenous osteomyelitis has become infrequent following prompt recognition with early adequate treatment. Carcinoma in a sinus tract, amyloid disease, amputation, etc. now belong in the category of the past.

Antibiotics are an aid to, and not a replacement of, adequate surgery. In osteomyelitis, pus beneath the periostium must be evacuated. It is not compatible with healthy bone. Sequestra usually must be removed. Biopsy to rule out tumor is occasionally necessary. Low grade infectious disease of bone oftentimes cannot be distinguished from malignancy. What has been said so far applies equally as well to suppurative joint disease.

Compound Fractures. In this field antibiotic agents have improved tremendously the final end results. Needless to say, they have not replaced the necessity for a thorough surgical cleansing of the wound and adequate immobilization.

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Other Types Of Bone Infection. There are many organisms to which bone is susceptible other than the most common, staphylococcus.

Slide: Here is a case of luetic osteomyelitis. Note the periosteal proliferation. These cases in the past, outstanding for their chronicity, are at present "sitting ducks" for penicillin.

Supportive Treatment. Their value in the treatment of post-operative infection hardly bears mention. It is so widely utilized. Undeniably, antibiotics have allowed us to utilize internal fixation and metallic replacement of bony parts heretofore tried only by the most daring.

Tuberculosis Of Bones And Joints. Draining sinuses, once the bane of existence of every orthopedist, are now closed by streptomycin therapy in about eighty-five per cent of cases. This naturally allows for earlier operation, and more successful surgery. It markedly diminishes the possibility of post-operative infection. Earlier rehabilitation of the patient is possible.

Summary

1. Antibiotics plus adequate surgery are eliminating the chronicity formerly associated with skeletal infections.
2. By their support, they allow for radical metallic replacement of bony parts with a success hitherto denied.
3. Much earlier rehabilitation of the paient afflicted with skeletal tuberculosis is now possible.

THE ANTIBIOTICS IN GYNECOLOGY

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Some years ago, with an armamentarium of morphine, hot and cold packs, calomel, a reasonable amount of "horse sense" and a kindly bedside manner, the physician could practice successfully the medicine of his day. However, within my lifetime, medical practice has become quite complex. If we may reminisce for a moment, let us go back to the Gyn. Clinic of 1930. At this time pelvic inflammatory disease was quite common and was treated with various and sundry measures such as foreign protein and boiled milk injections, several types of tampon, sedatives and analgesics. Gonorrhea in the infant female was treated with douches and argyrol instillations. During this time pelvic abscesses were common, and the average ward census included several cases of cul-de-sac drainage.

Surgery of all types was limited because of infection. When septicemia developed it was treated with intravenous mercurochrome and arsenicals. At the present time, aided by antibiotics, treatment in gynecology has considerably improved.

Classification of Pelvic Infections

Pelvic infections are divided into three types:

1. Venereal infection
2. Non-venereal mixed infection
3. Specific infections.

Venereal Infections

Gonorrheal infections. These respond well to both penicillin and aureomycin. I believe that it is the experience of us all that the incidence and morbidity of infections due to gonorrhea is much less than in former years.

Chanchroid. This infection, caused by the hemophilus ducreyi responds well to both aureomycin and terramycin.

Lymphogranuloma and Granuloma inguinal. These are best treated with aureomycin or terramycin and the drug should be administered for 2-6 weeks. Prior to the advent of antibiotics, the prognosis in these infections was poor; now is relatively good.

Non-Venereal Mixed Infection

The mixed pelvic infections usually include fecal bacteria, therefore two antibiotics are suggested. Of all bacteria involved the hemolytic streptococcus is the only one that is sufficiently invasive to establish itself on a clean wound, whereas the others often require devitalized tissue. Accordingly, secondary invaders are not uncommon in the pelvis where there has been an abortion or even a normal menstruation. It is common knowledge that among bacteria which are classed as sensitive to a certain antibiotic about one per cent may have been transformed into mutants which have developed resistance. These mutants, however, may be sensitive to another antibiotic. In the treatment of such conditions, and especially where a septic abortion is considered, I have had the greater degree of success when a combination of drugs were used, such as a sulfanamide and penicillin. Chloromycetin and penicillin were at one time used in combination, but at present it is felt that the combination is no more successful than a single drug inasmuch as they act on different metabolic functions. Some writers feel that penicillin is actually rendered less effective by the addition of chloromycetin.

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Specific Infections

Streptococcal and pneumococcal infections usually respond well to penicillin. Pelvic tuberculosis may be treated with dihydrostreptomycin singly or in combination with para-amino salicylic acid. Actinomycosis, which we rarely see is susceptible to both terramycin and penicillin.

Local Drug Therapy

The local application of antibiotics has been both praised and condemned. I have had some success with the vaginal applications of sulfonamides in many cases of chronic cervicitis. Following conizition or cauterization, it has seemed quite valuable. However, the use of the broad spectrum antibiotics intravaginally has been an unhappy experience. In sensitive patients, the local reaction is often extensive and severe. I have heard reports from the use of bacitracin suppositories pre-operatively, especially prior to a total hysterectomy. I have had no personal experience with bacitracin, but the experience I have had with antiseptics and sulfonamides has been good.

The sulfonamides and broad spectrum antibiotics have proved quite valuable. In cases requiring frequent catheterization or an indwelling catheter, the sulfonamides have served as excellent prophylactics against urinary infection. The very soluble sulfonamide Gantrisin or a triple combination of sulfonamides have been very effective in treatment and very infrequently do they produce crystalluria or sensitivity reactions.

Drug Dosages

Penicillin. This drug comes in many forms but the sodium and calcium salts are quickly absorbed and are preferable to the penicillin in oil preparations. 300,000 units every 12 hours would seem to be adequate in the majority of pelvic infections and 1,500,000 units may be given daily in case of peritonitis.

Streptomycin. This is given in the form of Dihydrostreptomycin in a dosage of 0.5 gm. twice daily and double this amount if the patient's condition warrants it.

Aureomycin and Chloromycetin. These are given in doses of 250 mgm. four times daily.

Terramycin. This is usually given intravenously in dosages of 200 to 500 mgm. in a 1000 c.c. of fluid, to be followed by an oral capsule of 250 mgm. four times daily.

Sulfanomides. A therapeutic blood level is accomplished by giving sodium sulfadiazine intravenously followed by a triple sulfonamide preparation orally in a dosage of 0.5 to 1.0 gm. four times daily. In the prescription of the broad spectrum antibiotics caution is needed because with the destruction of the normal bacterial flora the growth of monilia may no longer be surpressed and may reach pathogenic proportions.

Summary

In summary the antibiotics have represented a great forward step in gynecology. They have not in any way obviated the necessity for precise surgical technique or competent pre and postoperative care. They have, however, increased the scope of surgery and brought hope to many cases that were in earlier years considered hopeless.

ANTIBIOTICS IN UROLOGY

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It is difficult for the younger physicians to comprehend the vast changes that the use of sulfa drugs and antibiotics has made in urologic treatment. Largely because of the fear of infection, the pre-vesical space of Retzius has been surgically avoided until the antibiotic era. Now the space is being entered directly in the increasingly popular retropubic approach to prostatectomy. Improved control of infection has extended the indications for conservative renal surgery in many cases of stone or hydronephrosis which would have been subjected to nephrectomy before antibiotics were available. Since most urologic surgery is performed on infected or potentially infected cases, the generally decreasing morbidity and mortality rates are largely ascribed to the use of sulfa drugs and antibiotics. A specific example of such improvement is evident from a recent report by Dr. D. M. Davis given before the Philadelphia Branch of the American Urologic Association. Among an unselected group of his private patients during a two year period before 1940, twenty-two percent of the patients admitted because of prostatic obstruction never came to surgery, most having died of pyelonephritis. During the past five years among a similar group of patients, all were operated upon and there were no deaths from pyelonephritis.

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* Assistant, Urology Division, Delaware Hospital.

There are, however, some disadvantages to the efficacy of the antibiotics. It is often too easy to treat the infection present and not the disease. Meredith Campell states[1] that combinations of obstruction and infection constitute over ninety per cent of the major urologic problems in infants and children. One factor simply cannot be treated adequately without concomitant treatment of the other. Perhaps unfortunately, temporary sterilization of the urinary tract by antibiotics can sometimes occur in the presence of marked obstruction. If the resultant relief of symtoms leads to prolonged delay in necessary surgery, renal damage can only continue. An advantage claimed for the older mandelic acid therapy of urinary tract infections is that, if successful, it is presumptive evidence of the absence of obstruction.

For practical purposes, in the apparently uncomplicated cases of urinary tract infection, it seems reasonable to start treatment with a sulfa drug such as sulfacetamide or sufisoxazole or even a mandelic acid preparation plus an acidifier. If the symptoms have not disappeared and the urinalyses and stained urinary sediment have not become normal in a week or two, or if the symptoms recur several times, further study is indicated. Minimum studies consist of urine culture and intravenous urography. After such study, treatment with antibiotics as guided by sensitivity tests should be accompanied by treatment of any obstruction found. If an infection clinically appears acute and of a more serious nature, chloromycetin, or better, terramycin, are the best choices for treatment until a culture gives more precise information. In a similar situation, penicillin is not indicated since relatively few urinary pathogens are sensitive to it. Streptomycin would be contra-indicated because of the probability of producing resistant organisms, should obstruction be present. If obstruction requiring surgical correction is found, it is probably better to withhold specific antibiotic therapy until shortly before surgery is performed.

Of importance because of its frequent occurrence and refractoriness to all antibiotics is chronic non-specific prostatitis. Apart from brief courses to control acute symptoms, the antibiotics in general are of practically no value and of considerable expense. Apparently with the prostate it is a case of poor drainage and insufficient local concentration of the drug. There has been one recent encouraging report, however, concerning intraprostatic injection of aqueous penicillin via the perineal route[2]. Among 30 patients given 7-8 injections at weekly intervals, 18 have remained free of symptoms and free of pus in prostatic secretion from 6-12 months.

In genito-urinary tuberculosis, the use of streptomycin has simplified treatment to a great extent, and chronic tuberculous fistulae are now relatively rare. Probably the best controlled studies of chemotherapy in genitourinary tuberculosis have recently come from combined Army, Navy and Veterans Administration sources. Lattimer, of the Bronx Hospital, reporting on 228 cases,[3] states that the best results occur in cases having genital lesions only. Of this group, 80 per cent retained negative smears and cultures for over two years. Among 103 of his cases having renal tuberculosis in all stages, 40 per cent had negative smears and cultures for over two years. The size of renal lesions is a guide to prognosis. Lattimer's series shows that with large renal lesions—that is, 25 per cent or more of the kidney involved with tuberculosis—100 per cent were failures in regard to conversion of urine from positive to negative. With small lesions not visible by x-ray, there were 50 per cent failures after two years. These statements were based on a treatment schedule of one gram of streptomycin daily for 120 days. Various treatment schedules are still being investigated, but the older 42

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day treatment has been abandoned as being too brief. Lattimer's present policy is never to give streptomycin without PAS. The schedule receiving most attention consists of 12 grams of PAS daily plus one gram of streptomycin twice a week for a period of one year or even longer. The treatment of unilateral destructive renal lesions and tuberculous epididymitis is still surgical, with streptomycin and PAS coverage. Coverage schedules of three weeks or of 120 days are being used at present.

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CHEMOTHERAPY IN OPHTHALMOLOGY AND OTOLARYNGOLOGY

William T. Reardon, M. D.,*
Wilmington, Del.

In therapy, ophthalmology has successfully shared the antibiotics with general medicine. Antihistaminics are used with variable results locally and systemically in allergic ocular conditions. Chemotherapy should be based on the principle that organisms causing the infection must be sensitive to the agent, and that an effective concentration must reach the site of infection. When ocular infection is acute, therapy should be started immediately without waiting for the laboratory report. Therapy can be altered readily if laboratory studies or the course of the infection so indicate.

Sulfonamide mixtures are satisfactory because of the high concentration that can be obtained in the aqueous of the eye. With penicillin, the level in the ocular chamber is only one-tenth that in the blood. Streptomycin is useful for tuberculous ocular infection. Bacitracin is a safe agent for topical treatment of external ocular infections which formerly required penicillin or sulfa therapy. Aureomycin is the only antibiotic effective against the viruses of epidemic keratoconjunctivitis and herpes simplex. Penicillin ointment should not be used locally because there is a high incidence of sensitivity. The most promising new therapeutic agents are ACTH and cortisone. They are widely used in ophthalmology by local instillation and by intramuscular and subconjunctival injection. Many ocular inflammatory and allergic diseases are responding to them. Their action seems to be restricted to blocking the inflammatory reaction in collagen tissue, and thus preventing widespread damage during the time the disease is being controlled. Thus far, these substances have been used successfully in sympathetic ophthalmia, uveitis, episcleritis, scleritis, secondary glaucoma due to iritis, fresh vitreous opacities due to inflammatory exudate and hemorrhage, prevention of blood vessel formation in the cornea and retrolental fibroplasia.

In otolaryngology one may ask: what has become of the mastoidectomies that were so common before the advent of antibiotic therapy? The answer is that they are few and far between. I dare say that there were not a half dozen mastoidectomies done in Wilmington this past year. No, the otolaryngologist has not been put out of business any more than the urologist who rarely sees a case of gonorrhea. The otolaryngologist has turned to branches in his field which he has neglected for years. Otolaryngology is a broad field which embraces diseases of the ear, nose, and throat, surgery of the neck, reconstructive surgery, bronchoesophagology, allergy, physical medicine, and audiology. Allergy and audiology have been sadly neglected in the past, but are receiving a great deal of attention at the present time. Here at the Delaware Hospital, we have the only audiologic center in the state. It is fully equipped for diagnosis, treatment, and rehabilitation.

Mastoiditis is preceded by an otitis media, the result of an inflammatory process in the nasopharynx which has reached the middle ear via the eustachian tube. The organisms which are responsible for the infection of the middle ear are usually sensitive to both sulfonamide drugs and antibiotics. Usually, the family physician is the first to see the case of otitis media. The common findings are a running nose, fever, and pain in the ear; and on examination the tympanic membrane is acutely inflamed and bulging. Antibiotic therapy is instituted and the potential mastoiditis vanishes. Occasionally one of these cases will come to surgery due probably to a virulent organism in a weakened host who has received insufficient therapy. Most mastoids done at the present time are on chronic running ears that cannot be controlled by adequate therapy.

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Intracranial complications result mostly from acute exacerbation of a chronic suppurative otitis media. Since the advent of sulfonamides and the antibiotics the decrease in otorhinogenous intracranial complications has been remarkable. Occasionally one sees a complication which can be traced to (1) starting the specific drug too late, (2) inadequate therapy, (3) use of non-specific therapy.

Antibiotic therapy has changed the course of many respiratory infections. The need for sinus surgery has been reduced. The pendulum has swung toward conservative treatment. Under normal conditions very few bacteria are found in the nasal cavity. The normal flora consists mostly of staph. albus and diphtheroid bacilli with staph. aureus and N. catarrhalis present less frequently. Streptococci and pneumococci are occasional transients in the nasal cavity.

The Caldwell-Luc operation on maxillary sinus is rarely necessary. The radical frontal operation is less common than the Caldwell-Luc. Antibiotics are an aid in sinusitis, but ventilation and drainage must be established, which at times may require surgery.

There is no sound evidence that the true cold is influenced by antihistaminics or antibiotics, nor is there any reliable method of prevention. The true cold is often confused with the various forms of rhinitis which may be amenable to antihistaminics or antibiotics. Of the nasal complaints seen by the otolaryngoloist 75 per cent are on an allergic basis, and these are not affected by antibiotics. It is essential that more otolaryngologists realize that nasal allergy is their responsibility. The American Academy of Ophthalmology and Otolaryngology has a section devoted to allergy. I have been treating allergy of the respiratory tract for the past 13 years, with success. Bilateral nasal discharge suggests allergy, a unilateral discharge, infection. The dissatisfied patient after a submucous resection is the allegic patient.

Acute tonsillitis and streptococcal pharyngitis are treated effectively with both penicillin and aureomycin. Food interferes with absorption of penicillin taken orally, so it should be taken as nearly as possible on an empty stomach.

In closing, may I remind you that none of these drugs is "a cure-all". We must be on our guard at all times to be ready to change our plan of attack at any moment, and institute surgery when indicated.

ANTIBIOTICS IN CARDIOVASCULAR DISEASES

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The three diseases which have benefited most from the antibiotics in the field of cardiovascular disease are subacute bacterial endocarditis, cardiovascular syphilis, and rheumatic fever prophylaxis.

Subacute bacterial endocarditis, a disease which previously had almost a 100 per cent mortality, is now curable in about 70 per cent of the cases. The time-dose relationship, on the average, involves 4-12 million units of penicillin daily for 30 days. Rarely, extremely high doses are required for resistant organisms, and one case has been reported in which 86 million units a day were used. The use of renal blockade has not been necessary because of the reasonable cost of this antibiotic. However, in the presence of a renal lesion or with renal blockade, high blood levels of penicillin—as much as 100 units per c.c. of blood—have been achieved. The most difficult organisms encountered belong to the enterococcus group, and some of these have proved extremely resistant. These organisms account for about 10 per cent of the cases of subacute bacterial endocarditis. It is here that combined therapy has been tried, but it is interesting to note that aureomycin, streptomycin, chloromycetin, and penicillin have often failed to sterilize the blood stream, where penicillin alone has failed. Also, organisms developing resistance to one antibiotic may show resistance to all. Further clarification on combined therapy is needed. Recently, the availability of polymyxin B offers aid to blood stream infections due to the proteus and pseudomonas group.

The cure rate of only 70 per cent is not due entirely to failure to sterilize the blood stream, since about one half of the cases die as a result of cardiac failure resulting from distortion of the valves due to healing. Also, reinfections or relapse causes a small percentage of failures. Early diagnosis is a most important factor in achieving a cure. The anti-coagulants have no place in therapy.

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In the field of cardiovascular syphilis present studies indicate that about 10 million units over a 10 day period seems to be as effective as larger doses, and may be given without fear of Herxheimer reaction or therapeutic paradox. This disease is admittedly difficult to diagnose in the early stages and improvement is statistically hard to evaluate. Occasionally, a full-blown case of aortic disease with regurgitation seems to be worsened. The use of preliminary heavy metals is not necessary.

The third consideration—the prophylaxis of rheumatic fever—seems of value when used in children who have had one attack of rheumatic fever. Although of no value in the treatment of the acute phase, penicillin can prevent hemolytic streptococcus infections which are believed to be the cause of the disease. 300,000 units daily throughout the year have been given until the child has finished school; or in the case of an adult, for five years after the attack. In 34 cases of proven rheumatic heart disease in which penicillin was used for upper respiratory infections, there were two recurrences of the disease. This is balanced against twelve controlled cases in which no penicillin was given and in which six recurrences occurred. U.S.A.F. studies reported two cases of rheumatic fever in 800 upper respiratory infections in which the streptococcus was present and in which penicillin was used; against this, control studies showed 17 cases of rheumatic fever in 800 cases not treated by penicillin. Concerning the development of resistant strains of betahemolytic streptococcus, one study showed that 100,000 units of penicillin a day would result in resistant strains in the throats of 64 of 82 children. However, this resistant organism could be eliminated from the throat by 1 million units daily for five to ten days. Fortunately, there have been no permanently resistant strains develop such as the classic type 17 streptococcus which resulted from mass sulpha prophylaxis in the Army. While the use of penicillin prophylaxis is of some value, the cost (about $100 a year) and the nuisance of the procedure to the patient are of some consideration. Its use in dental extractions and other minor surgery, in cases of rheumatic valvular disease and congenital heart disease, is of unquestioned value in preventing seeding of the blood stream.

ANTIBIOTICS IN THE TREATMENT OF PULMONARY DISEASES AND MENINGITIS

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It is well recognized that the introduction of antibiotics has sharply decreased the mortality rate associated with meningitis and various pulmonary diseases. The complications accompanying pulmonary diseases are now rarely seen except in large or inadequately treated cases. Further reduction of mortality rates depends upon an early, accurate, etiologic diagnosis. This is possible only when there is close cooperation between the physician and bacteriologist. When the causative organism is identified, the proper choice of one, or a combination of antibiotics is possible. Usually one antibiotic, given in adequate dosage, is preferred to a combination of antibiotics.

Pneumonias having a lobar distribution and caused by the pneumococcus had a pre-serum mortality rate of 40 per cent. The use of type specific serum reduced the mortality rate to 16 per cent and sulfa drugs further decreased it to 12 per cent. Since the advent of penicillin the mortality rate is approximately 6 per cent. Present day deaths occur in older patients, patients who are debilitated with other diseases, alcoholics, or those who are treated too late.

Penicillin has been used in lobar pneumonia in divided doses, as a single large dose, or orally, with equally good results.[1] Aureomycin, chloromycetin, and terramycin are as effective as penicillin, although more time is required for the patient to become afebrile.[2]

A typical pneumonia, or pneumonia caused by an organism other than the pneumococcus, is most effectively treated by identifying the causative organism and choosing the antibiotic to which it is most sensitive, according to disking techniques. In most instances it is acceptable to begin therapy with penicillin until the organism and sensitivity is established. The presence of Frielander's bacillus precludes the use of penicillin and would best be treated with streptomycin or one of the broad spectrum antibiotics[3]. Various bacteria may cause atypical pneumonia, and for this reason, proper therapy must depend upon isolation and the determination of the sensitivity of the organism.

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Viral pneumonia is of unknown etiology. About one half of the cases have cold agglutination of erythrocytes and a positive streptococcus M-G titre after the tenth day of illness. Virus pneumonia may be confused clinically with ornithosis, psittacosis, typhoid tuberculosis, histoplasmosis, coccidiodomycosis, Q fever, or pneumococcal atypical pneumonia. Since the treatment for the latter diseases differs, it is important that the correct diagnosis be made. At the present time there is no justification for the routine use of penicillin in the treatment of virus pneumonia unless there is a question of a co-existent coccic infection. The efficacy of aureomycin, chloromycetin, and terramycin in the treatment of viral pneumonia is still an unsettled question [4, 5].

Acute pulmonary infections associated with bronchiectasis may be due to one invading organism, but more frequently several different bacteria are involved. When mixed infections occur they are possibly best treated with a combination of penicillin and streptomycin. A single broad spectrum antibiotic may be effective if it can be tolerated in proper dosage. Aerosol penicillin may be useful, but its efficacy depends upon the presence of a penicillin sensitive organism.[6] Recurrent acute infections superimposed on bronchiectasis may be decreased by prophylactic treatment with daily small doses of oral penicillin or sulfa drugs.

The meningitides which we most frequently encounter are caused by the meningococcus, pneumococcus, and H. influenza. It is urgent that the exact etiology be determined early so that the most effective antibiotic can be utilized.

Before antibiotics were available meningococcic meningitis had a mortality rate of 75 per cent. The introduction of sulfa reduced the mortality rate to approximately 10 per cent. Experimentally, chloromycetin, aureomycin, and terramycin are equally as effective as penicillin or sufa. Chloromycetin has been observed to be very effective clinically. A few strains of meningococcus are known to show rather marked resistance to penicillin. Because of the occasional resistance to penicillin, and inadequate time evaluation of newer broad spectrum antibiotics, sulfa drugs (sulfadiazine or gantrasin) are still the choice treatment. Prophylactic treatment with gantrisin has been shown to be effective in controlling epidemics of meningococcic meningitis and reducing the carrier rate of meningococcus.

Pneumococcic meningitis in the pre-serum era was almost 100 per cent fatal. Penicillin has reduced the mortality rate to about 25 per cent. Chloromycetin, aureomycin and terramycin are effective but insufficient numbers of cases have thus far been reviewed. Penicillin given parenterally in massive doses is as effective as a combination of penicillin and sulfa[7]. In the presence of inflamed meninges, penicillin effectively crosses the meningeal barrier and, if given in adequate dosage (1 million units every three hours) intrathecal therapy is unnecessary. Every effort should be made to curtail or abandon intrathecal therapy of pneumococcal meningitis [8, 9]. There is a great tendency at present to combine penicillin with broad spectrum antibiotics. Dowling and Lepper[10] reported a series of cases of pneumococcal meningitis treated with massive doses of parenteral penicillin with a mortality rate of 20 per cent; a second group treated with penicillin and aureomycin had a mortality rate of 79 per cent. This clinical experience tends to corroborate Jawetz's[11] observation of in vitro antagonism of penicillin and certain broad spectrum antibiotics.

Meningitis due to hemophilus influenza had a mortality rate of 90 per cent or greater, before antibiotics were available. The mortality rate at present is recorded as low as 4 per cent. Aureomycin and terramycin are the most effective antibiotics by animal experiments. However, clinically, chloromycetin is accepted as the most effective treatment of H. influenza meningitis at the present time. Before the discovery of the newer broad spectrum antibiotics, a combination of streptomycin and sulfadiazine was the choice therapy.

This combination was not ideal because the organisms rapidly developed resistance to the drugs, and the intrathecal use of streptomycin added another hazard to the treatment[12].

Meningitis caused by organisms other than those discussed, are best treated according to the sensitivity of the organism to various antibiotics as demonstrated by disking techniques.

Summary

In general, the treatment of meningitis should be directed at the specific organism in question. With the exception of tuberculous meningitis and enterococcal meningitis it is more desirable to use a single antibiotic in adequate dosage than a combination of antibiotics. This is especially true if the combination involves penicillin with aureomycin, terramycin or chloromycetin. In view of present day literature it appears advisable to curtail or abandon intrathecal therapy in favor of proper parenteral dosage. Effective treatment of the various pulmonary diseases is dependent upon the causative organism. When the etiologic organism and its sensitivity to various antibiotics is determined the antibiotic of choice can be used effectively.

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ANTIBIOTICS AND THEIR USE IN DISEASES OF THE GASTRO-INTESTINAL TRACT

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I would like to start my brief discussion by mentioning certain diseases characterized by diarrhea. The first member of the group of primary infectious diarrhea is typhoid fever caused by salmonella typhosa. Over the past several years all aspects of medical literature have been filled with reports on the treatment of typhoid by the use of chloramphenicol. Of the antibiotics under discussion this evening, this at the present time, seemingly, is the drug of choice. Once the diagnosis has been established, it is necessary to begin treatment promptly and the initial dosage usually employed ranges between 1 and 3 gms. followed by ½ gm. every 2-4 hours. It has been pointed out many times that relapses may be expected to occur if the drug is given for less than 8-10 days. It has also been noted that hemorrhage and perforation occur following fever lysis because of the latent healing of the intestinal lesions present. As more cases are studied of this disease it becomes evident that the typhoid carrier state is still an ever present problem for which this drug or any of the other antibiotics has failed to answer with uniform satisfaction. The answer to this problem is still forthcoming.

The second clinical entity is the commonly termed "food poisoning", caused by other members of the salmonella group. This specific enteritis is not to be confused with another type of so-called food poisoning which results from the ingestion of food in which enterotoxigenic organisms, usually staphlococci, have grown. It seems apparent at the present time that chloramphenicol in the treatment of salmonella infections is the drug of choice; although aureomycin and terramycin have both been found to be definitely effective. Treatment again should be the initial use of 1-2 gms. of the drug followed by ½ gm. every 4-6 hours thereafter. The response is as a rule dramatic and treatment need not be continued beyond 2-5 days in the average case.

The third clinical entity is that of bacillary dysentery caused by the shigella group of organisms. This is a much more frequent infectious diarrhea than previously described. Here again good to excellent results have been reported with the use of chloramphenicol, aureomycin, and terramycin—although aureomycin and terramycin seem to have the edge in regards to overall effectiveness.

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The fourth form of primary infectious diarrhea is that of the amebic dysentery caused by endamoeba hystolytica. Over the past years there has been numerous reports with discussion on the point: Are the present antibiotics amebacidal? It has been found that chloramphenicol, aureomycin, and terramycin are amebastatic in action, or may attenuate virulence of the amoeba; but are not amebacidal agents. It is the opinion of many who work closely with this disorder that treatment should be aimed at both intra- and extraluminal aspects of the disease. In this respect chloroquine, vioform, emetine, etc. have all been used in combination with the antibiotics under discussion, but not widely investigated. It seems evident that the more literature that appears on the use of terramycin in this disease shows us once again that this particular antibiotic is the most effective of the group. The average therapeutic dose appears to be 500 mgm. every 6 hours and a total of approximately 20 gms.; however, not enough long term follow-up has been given to truly evaluate the place of any antibiotic in the therapy role on amebiasis. If these agents are used it seems obvious that both follow-up studies for recurrence of positive stools, or the return of chronic amebic states be watched for. At the present time the use of aureomycin and terramycin as the sole remedy recommended for systemic amebiasis is still in the experimental stage. These drugs seem to be of some value in amebic hepatitis and are without serious toxic effect even in the presence of liver damage.

The next group are parenteral and secondary diarrheas consisting of parenteral diarrhea chiefly caused by steptococci, staphylococcic, pneumococci, and possibly certain viruses. Obviously, these are not often specifically identified and treatment is usually symtomatic or directed toward a generalized illness.

It seems obvious that non-infectious diarrhea such as that caused by the toxins of staphlococci, products of bacterial decomposition, nutritional diarrhea, allergic diseases, etc. are not helped by the use of these antibiotics.

Pathogenesis of *chronic ulcerative colitis* and *regional or idiopathic enteritis* remains obscure but it seems possible to conclude at this time that these diseases are a product of many factors, and that the infectious manifestations are probably only secondary to the underlying dysfunction. Obviously, specific therapy is important because secondary infection may be a major factor in establishing the chronicity of the lesions. It has been commonplace therapy to employ one of the intestinal sulfas, aureomycin, chloromycetin or terramycin as an adjunctive factor in therapy. All of these drugs have been found to be of valuable aid in controlling the secondary invasion, and a number of isolated reports show marked improvement following their use in these diseases. In severe toxic states the intravenous route in administering aureomycin or terramycin may be employed; otherwise oral medication seems to be equally satisfactory.

An important place in the use of these drugs is in preparation of the patient for surgical intervention. It might be also noted at this time that this applies likewise to preparing any patient for intestinal surgery. It has been found that either aureomycin or terramycin does effectively sterilize the intestinal tract of aerobic organisms in 48-72 hours, when the patient is given 1 gm. t.i.d. Many investigators recommend that the administration of antibiotics for ulcerative colitis and surgical preparation should be restricted as to duration, since continuance of administration may lead to the development of bacterial strains that can utilize these substances. It should also be mentioned that in some severe cases of ulcerative colitis with fistulae and ischiorectal abscesses, aureomycin and terramycin in particular have had rather a dramatic effect. It should be kept in mind for the use in those circumstances.

Both aureomycin and terramycin have been found to be effective in the treatment of cholangitis, either before or after surgery. These drugs, also, have been found to give good results in controlling acute infectious in the biliary tract prior to operation for the removal of common duct obstruction. If, however, there is complete or nearly complete obstruction of the cystic or common duct, aureomycin or terramycin will be unable to act effectively. In many of these cases intravenous therapy is indicated. It has been shown that these drugs have been efficacious because of their ability to reach high concentration in the bile, which runs approximately 10-15 times higher than that of the serum. It seems likely that the time interval between the onset of an acute cholecystitis and the optimum time for surgery will be shortened in the future due to the use of these antibiotics. Acute free perforation of the gall bladder, which carries with it a uniformally high mortality, due to a diffuse biliary peritonitis, should be treated with heavy doses of aureomycin or terramycin, together with therapeutic doses of penicillin.

Over the past years reports have appeared regarding the use of chloromycetin and aureomycin, and more recently terramycin as an adjunctive therapy in acute viral hepatitis, either the infectious or homologous serum types. At the present time doubtful value has been placed on these agents, as well-controlled series of cases have shown that there has been no significant difference between those treated and untreated controls as evidenced subjectively or by laboratory tests. In all instances treatment was not started until the icteric phase was evident. At the present time experimental studies are being carried out with the employment of these antibiotics, prior to the icteric phase, in experimentally-produced hepatitis. With the evidence at hand it does not seem worthwhile to administer these drugs in the average case of hepatitis because of their doubtful value and the added expense to the individual.

Isolated reports have appeared in the literature in regards to aureomycin therapy and hepatic insufficiency—50-75 per cent of all cases show definite improvement. However, on several cases it was reported that patients who initially improved, returned some weeks later to succumb to their illness, despite repetition of a course of therapy. It is suggested at the present time that the beneficial effects of intravenous aureomycin are due to its action on the microorganisms in the portal circulation of the liver. Aureomycin acts on the intestinal flora when given orally and thus prevents the production of toxic substances which, under normal conditions, are destroyed by the liver; and in liver disease accumulates and finally produce the toxic changes characteristic of hepatic insufficiency. When given intravenously its principal action would be on the organisms which have gained entry into the portal circulation. The fact that a diseased liver is unable to form proper immune bodies, to detoxify properly absorbed toxins reaching it by the portal circulation, or to filter properly bacteria from the portal blood, is well established. Results at the present time with aureomycin and terramycin seem to indicate that it should be given a therapeutic trial in patients with hepatic insufficiency or those in hepatic coma. In certain instances this may be a life prolonging measure.

It should also be mentioned that aureomycin causes urobilinogen to disappear from the stool and fecal bilirubin to increase. Thus the administration of either aureomycin or terramycin may interfere with the differential diagnosis of jaundice or hepatitis without jaundice. Because of the disappearance of urobilinogen from the intestinal tract, it also disappears more or less completely from the urine, and this also must be considered when evaluating the existence of liver damage in a patient on terramycin or aureomycin.

ANTIBIOTIC SENSITIVITY TESTING

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Prior to the antibiotic era, the primary purpose of the bacteriology laboratory was to isolate and identify the etiologic agents of infection. Since then the clinician is more interested in which of the available antibiotics is most likely to be effective against the organism, than in its identity. It is this phase, antibiotic susceptibility testing, that I wish to consider tonight.

There are three available methods at present for in vitro susceptibility testing. These are:

1. The Agar Plate Dilution Method[1]

In this procedure, graded amounts of the various antibiotics are added to agar-containing culture media while in the molten state. The media are then poured into sterile petri plates and allowed to harden, and stored in the refrigerator. By dividing each plate into sectors, or "pie plates", eight different organisms can be inoculated on the surface of the plate, and after 24-48 hours of incubation, the presence or absence of visible growth can be noted. Thus the minimum inhibitory concentration of the antibiotic can be determined.

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This procedure is somewhat cumbersome for routine work in a small laboratory, where the maintenance of such a quantity of plates may not be practical. Such factors as inoculum size, deterioration of antibiotics, etc., must be considered and standardized in order for results to be of value clinically.

2. THE TUBE DILUTION TEST [2,3]

Serial two-fold dilutions of an antibiotic or combinations of antibiotics are made in sterile tubes, using broth as the diluent. A prescribed volume of an eighteen hour broth culture of the offending organism diluted 10^{-3} or 10^{-4} is then added to each tube, and incubated 4-48 hours. The endpoint is usually taken as the last tube showing no visible turbidity; although variations, including 50% inhibition endpoints, and subculturing in antibiotic-free media, have been used. The minimum inhibitory concentration of the antibiotic, expressed in micrograms or units per millimeter of broth, is thus determined.

This technique, although recognized as the most accurate of the in vitro procedures, has several disadvantages. The first and most important is its lack of laboratory practicality. It is both laborious and time-consuming, especially if one considers that as many as six series of tubes may be required for the available antibiotics. Furthermore, in many infections (particularly of the urinary tract) several pathogens may be isolated. This could result in the setting up of at least sixty tubes, requiring a considerable amount of time for this single culture. Secondly, there are also numerous variables, such as incolum size, composition of medium, time of incubation, etc., which play an important role in the end result. For these reasons, the technique is recommended primarily as a research tool, to be used on selected cases.

3. THE FILTER PAPER DISC TECHNIQUE

Although it has some drawbacks, this technique offers the most as a practical and useful guide to therapy. In this procedure, described by Bondi, Spaulding and others[4] in 1947, a small sterile filter paper disc is immersed in a standard antibiotic solution and placed on the surface of a blood agar or other solid plate, immediately after inoculation. Following overnight incubation, the organisms present are identified by colonial and/or tinctorial morphology, and the sensitivity of each type is estimated. This is done by measuring the diameter of the clear zone (absence of growth) of inhibition surrounding the disc. By this method it is possible to test at least five antibiotics simultaneously on one plate, with the added advantage of identifying the organism at the same time. In most instances, therefore, a culture report, including sensitivities, can be submitted in twenty-four hours—a considerable saving of time over the previous methods.

The concentration of the standard solutions have been adjusted by comparison with tube dilution values and clinical correlation, including serum drug levels. The method does not lend itself to accurate quantitation, since variations in test conditions, such as inoculum size, antibiotic diffusibility and concentration in the disc, may result in different end results. For example, when two antibiotics, as chloramphenicol and aureomycin, are tested against a single organism, it does not always follow that the one showing the largest zone is the antibiotic of choice. For this reason, the results using this technique are reported in terms of sensitive, moderately sensitive and resistant. The principle disadvantage of the originally described method—the time-consuming preparation of standard solutions—has been recently obviated by the introduction of commercially prepared discs, containing the dried antibiotics in a stable state. We have tested these and find them quite acceptable for routine work.

In comparing clinical correlation with in vitro susceptibility testing, it is apparent that variables must be considered. Provided the causative organism is actually isolated and found to be sensitive, the correlation is remarkably good. Infections which have been refractory to empirical treatment are generally found to be resistant to the antibiotic employed, and respond to the drug selected by in vitro testing. In relapsing infections the primary incitant, sensitive to the antibiotic employed, may have been replaced by another microorganism with a different sensitivity. This occurs frequently in infections of the urinary tract, and can be re-evaluated by subsequent culturing and retesting.

On the other hand, clinical and laboratory discrepancies do occur, and may be due in part to: inadequate dosage, emergence of resistant mutants, or mechanical and anatomical barriers interfering with absorption and diffusion. There occurs also the example of an organism resistant in vitro which is rapidly destroyed in vivo, as evidenced by prompt recovery.

In finality, it is well to keep in mind the often overlooked fact pointed out by Dr. Spaulding[5] that "the role of antibiotics in clinical cure is to inhibit growth, and this increases the effectiveness of phagocytosis and other immune mechanisms,—obviously not included in the in vitro tests." Or to quote Dr. Theodore Woodward, "the best sensitivity test is the patient's temperature chart."

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CLINICOPATHOLOGIC CASE REPORT

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and
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Presentation of Case[***]

Dr. Katherine Esterly: This is the eleventh Delaware Hospital admission of this 48 year old colored male.

Chief Complaint: Fatigue, malaise, shortness of breath, and swelling of ankles of one month's duration.

History Present Illness: Patient has been unable to work since gradual onset of symptoms one month ago. He noticed swelling of abdomen four to six months previously, following being jarred by a truck which struck a box which he was carrying. These symptoms increased in severity with abdomen becoming increasingly painful. Systemic review revealed weakness and anorexia. Cough productive of white frothy sputum. No other complaints revealed.

Physical examination: Temp. 96.6°; pulse 116; resp. 28; B.P. 110/70. Patient was acutely dyspneic, lying in bed crying out with abdominal pain. The skin was hot and dry. There was pallor of the eyelids and face. There was edema. The mouth showed dental caries. The neck was negative. The spine showed kyphosis. Examination of the chest revealed diaphragmatic expansion impaired bilaterally. Atrophic musculature. Tactile fremitus decreased. Hyperresonance throughout lung fields, except for impaired percussion note at both bases. Bronchovesicular breathing with moist inspiratory rales at both bases posteriorly. Bronchial breathing anteriorly, with ronchi. Examination of the heart revealed PMI at 6th interspace at MCL, moderate force. No thrills. Sinus tachycardia. Rate 116-120 per minute. Right border not enlarged. The abdomen was markedly protuberent. Liver, palpable down to iliac crest and to left beyond midline, was smooth and very tender. Ascites present. No CVA tenderness. No other masses or organs palpable. There was clubbing of the fingers, and edema of hands and legs. The genitalia were normal male. Rectal examination was negative. Lymph nodes negative.

Past Medical History: Patient first learned that he had an anemia at Philadelphia General Hospital in 1926. In 1940 he was treated for leg ulcers at Philadelphia General Hospital. Prior to admission to that hospital patient complained of crampy abdominal pain and pain in shoulders, legs and arms. Several years later he was treated at Johns Hopkins for ulcer on the back of the left side of the chest.

Delaware Hospital Admissions: 1943—Thrombophlebitis of right femoral vein with sharp pain in right leg, especially the calf. Liver palpable 2 fingers below the coastal margin. X-ray right tibia—irregularity of cortex of medial aspect at junction of middle and distal thirds. Marked thickening of periostium. No ray formation. Impression: Benign tumor. Lues should be considered. Also seen following trauma. Complained of epigastric pain, no positive physical signs. Gastric analysis: No free HCl in any specimen. Total Acid—10 U in residium, 6 U in subsequent specimens. RBC 3.1 million; Hgb. 8.5 Gm.; WBC 11,400, increase in seg. polys.

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[*] Internes, Delaware Hospital.

[**] Resident in Pathology, Delaware Hospital.

[***] Delaware Hospital Case No. 158082, presented at Staff Clinical Pathology Conference.

1944—Thrombophlebitis left femoral vein. History of episodes of hemoptysis in the past. Pallor and icteric sclerae. RBC 3.1 million; Hgb. 7 gm.; Platelets 300,000; Reticulocytes 1%; WBC 13,200; Normal differential; Icterus Index 12 units. Urine—Sp. gravity 1.010; albumin + 2; occasional hyaline casts. X-ray of thoracic and lumbar vertebrae—marked increase in density in all lumbar vertebrae with bony ankylosis. Increase in density of thoracic vertebrae and ribs. Skull thickening with radial striae; 500 c.c. of whole blood given.

1945—Severe diffuse body pain, especially in left chest, and all extremities. RBC 2.5 million; Hgb. 7.5 gm. Urine—Sp. gravity 1.012; albumin + 2; negative for Bence-Jones protein; serum acid phosphatase 0.4 units; serum alkaline phosphatase 7.3 units; serum globulin 5.2 gm.%. Eye grounds, increased vascularity. Treatment for pain relief: calcium gluconate; two 500 c.c. blood transfusions.

Patient admitted seven times between March 1945 and March 1950 with combination of complaints of abdominal pain and distention; painful joints involving ankles, knees, hips; left chest pain; right lumbar pain; left CVA pain; frontal headache and dizziness and epigastric pain. Clinical icterus present intermittently. Fluctuation in liver size. RBC varied from 2.3 to 3.1 million; Hgb. from 7 gm. to 11 gm. Gradual increase in nucleated RBC from 17/100; WBC in 1947 to 147/100 in 1950. Persistent + 1 to + 2 albuminurinia. Urine: Sp. Gr. from 1.006 to 1.014; WBC varied from 1—5WBC/HPF to 30 - 40 HPF. Treatment consisted of relief of pain, cal. gluconante, and repeated blood transfusions. During all admissions patient complained bitterly of severe pain and would cry and writhe in bed. Complaints increased when nurses or doctors were present. Placebos were very effective about three days after each admission.

Patient was followed in clinic and given numerous transfusions in Out-Patient Department.

In 1946 x-ray of spine following a fall from a height of 20 feet showed marked kyphosis of upper lumbar spine, and narrowing of anterior borders. Sclerosis of bones of lower thoracic and upper lumbar vertebrae with marked hypertrophic spur formation with almost complete bridging across anterior and lateral margins of bodies of vertebrae. No evidence of fracture.

In 1950 chest x-ray showed generalized cardiac enlargement, chronic pulmonary congestion, and diffuse osteoporosis with thinning of cortex of bony thorax.

Laboratory Studies: 1/30/51 RBC 1.3 million; Hgb. 4.1 gm.; moderate hypochromia, marked anisocytosis; moderate polychromatophilia; target cells and pencil forms.

WBC 11,800; Polys 68%; Non-segs 2; Lymphs 27; Monos 3; marked toxic degeneration; nucleated RBC 145/100 WBC. BUN 32 mg.%. Icterus Index 19. Mazzini—negative. Urine: Sp. Gravity 1.007; acid; albumin + 4; sugar and acetone negative; RBC 1-2/HPF; WBC 10-15/HPF; occasional granular casts.

2/1/51 Plasma chlorides 400 mg.%. Icterus Index 58. Total serum proteins 8.12 mg.%; serum albumin 1.38 gm.%; serum globulin 6.74 gm.%; serum cholesterol 212 mg.%.

2/3/51 Thymol turbidity +2. Cephalin flocculation + 1 and + 2.

2/9/51 Prothrombin time 60%. Sputum culture; normal flora. Urine culture: scanty growth of staph. albus and enterococcus. Blood culture: No growth aerobic or anaerobic after 16 days. X-rays of chest, skull and femur: no change from previous examination except for increase in transverse diameter of cardiac shadow.

1/30/51 EKG—Chest leads slight elevation of ST seg and shallow T wave inversion in all positions. Suggestive of pericarditis.

2/9/51 EKG—Chest leads show return of ST segment to isoelectric line and deeper T wave inversions. Suggest recent myocardial infarction which is not transmural in extent.

Hospital Course: Patient was digitalized and placed on ammonium chloride. Liver decreased in size, remaining soft and tender. Edema subsided. Developed gallop rhythm which lasted about 6 days and disappeared by 2/9/51. Rales disappeared.

Patient became incontinent and irrational. On 2/14/51 became very dyspneic and was given oxygen. He became increasingly irrational and dyspneic, and expired on 2/15/51 at 12:30 a.m.

DIFFERENTIAL DIAGNOSIS

Dr. Doris Martens Araujo: This patient's disease was one of many years duration with varied symptoms and a clinical picture of varied disorders. He was told at 23 years of age that he had an anemia. Since then, especially in the last ten years of his life, he had numerous admissions to the hospital for leg ulcers, thrombophlebitis, abdominal pain and pain in the extremities and joints, and he received repeated transfusions. Findings on these admissions consisted of anemia, icterus, evidence of red cell regeneration, hepatomegaly, bone changes, albuminuria, and moderately high platelet count.

His final admission was for dyspnea and swelling of the ankles and abdomen. In addition to the findings of his previous examination, he had basilar rales, cardiac enlargement tachycardia, severe hepatomegaly, ascites and edema. If the ascites and hepatomegaly were on the basis of portal obstruction, one would expect other findings, as those of collateral venous channels. If renal in origin, the albuminuria should have been massive with waxy casts and hypercholesterolemia. In view of his anemia of long standing, which obviously was not amenable to therapy, I would ascribe these symptoms to congestive failure on the basis of a continued high output demand placed on the heart for many years, with resultant hypertrophy, dilatation, and ultimate cardiac failure.

That these major symtoms can occur with the only structural cardiac change being that of hypertrophy, dilatation and interstitial edema is borne out by autopsied hearts in cases of long standing anemia. Even with signs of mitral disease, as a diastolic murmur, valvular disease is not encountered. No mention is made of a murmur in this patient, and it is hard to believe he did not have one.

The next question is easily answered; viz., what kind of anemia existed in this case? The race, history of leg ulcers and thrombophlebitis, pains in extremities and abdominal pain leave little doubt that this was sickle cell anemia. The blood picture of anisocytosis, polychromatophilia, and many nucleated red blood cells with a mild icterus is typical.

The bone changes in sicklemia are of two kinds: first, thinning of the cortex and widening of the medullary cavity; and, second, decrease in the width of the marrow due to encroachment by the cortical bone. The first change is explained by the attempt of the marrow to replace destroyed erythrocytes, and its encroachment upon the cortex as it becomes more hyperplastic. The second change is due to the propensity of the peculiarly shaped sickle cells to lodge in small capillaries and produce minute thrombi, which, in the blood vessels of bone, lead to necrosis and abnormal calcification with new bone formation. The results of these two processes with one or the other predominating in various parts of the bony structure are, as we see in these plates, abnormal trabecular markings, cortical thinning or patchy thickening, areas of increased radiolucency, osteoporosis and periostitis. In the skull the changes seen frequently are radial striations and thickening of the skull with a thin or absent outer table.

The heart in various reported cases of sickle cell anemia has had electrocardiographic evidence of myocardial damage. However, at autopsy, there was complete lack of any infarction and the finding only of dilatation.

The abdominal pain of sickle cell "crises" has been variously ascribed to gall stones (which occur in this disease), arterial thrombosis of the liver, splenic infarcts and root pain due to changes in the vertebrae. None of these is more than conjecture. The cerebral symptoms of headache and dizziness are probably due to thrombosis occurring in cerebral vessels. The question as to why the body, which has been tolerating the presence of these abnormal cells, suddenly takes a dislike to them and destroys them wildly is unsolved. They are more resistant to hemolysis than normal cells in hypotonic solution. It may also be added that hypochlorhydria is said to be commonly observed in this disease, thus ruling out any objection based on this finding.

There are two findings which are not quite so clear cut. One is the consistent albuminuria with leucocytes and casts in the urine. This is most conveniently explained by postulating small renal infarcts due to multiple thrombosis. Hemosiderosis from destroyed sickle cells would cause tubular damage and perhaps lack of ability to concentrate urine.

The other difficulty is the evidence of hepatic damage. On a purely congestive failure basis, the tests of parenchymal damage are usually normal. The renal involvement does not seem marked enough to explain the reversal of the albumin-globulin ratio and marked hypoalbuminemia. Perhaps there was liver damage from arterial thrombosis. The fluctuation in liver size through the years is often seen.

The lack of infectious episodes in the patient's life is unusual, inasmuch as these patients frequently succumb to pneumonia. The terminal picture in this case doubtless includes an infectious process.

Clinical Diagnosis

1. Sickle cell anemia.
2. Hypertrophy and generalized dilatation of heart, with congestion of lung, and basilar pneumonia.

Pathological Discussion

Dr. Huntington: On opening the body all of the abdominal organs were markedly icteric. The liver was extremely large, it weighed 1900 grams and involved 50% of the abdominal cavity. The heart showed right dilatation and left hypertrophy. The aortic valve showed endocardial vegetations, so, as was suggested in the clinical discussion, infection was present to provoke the final exodus. On sectioning, the liver was found to be fibrotic with microscopic evidence of cirrhosis and hemosiderosis, a finding not uncommon in sickle cell anemia patients who have received multiple blood transfusions. The spleen also showed the typical finding resulting from sickle cell anemia of long duration: it was only a minute remanant consisting of a fibrotic nodule measuring 2 x 0.2 cm. The kidneys showed glomerular fibrosis and tubular hemosiderosis. An interesting associated finding was a Salmonella perivertebral abscess in the lumbar area, again evidence of the terminal septecemia resulting in death.

Pathological Diagnosis

1. *Acute bacterial endocarditis.*
2. *Sickle cell anemia.*

OBITUARY

Theodore Schwedenberg, M. D.

Dr. Theodore Schwedenberg, of Seaford, 76, died on June 24, 1952, in Peninsula General Hospital, Salisbury, Maryland, following a cerebral hemorrhage.

He was a native of Germany and was graduated from the University of Breslau, School of Medicine, in 1902. During World War I he was the personal physician to Prince Buelow, Imperial Chancellor of Germany, and a surgeon on the Eastern Front where he was the recipient of two Iron Crosses. During the entire post-war period he acted as consulting physician for the American and British embassies and consulates in Berlin. He later became chief physician of the A. E. G. (German General Electric Company) in Berlin until his retirement in 1935.

In 1939, shortly before the outbreak of World War II he brought his family to America, and again took his medical examinations and practiced in New York City. In 1946, at the age of 70, Dr. Schwedenberg was offered the position of plant physician with the DuPont Company in Seaford. Advancing age and the first signs of ill health forced his retirement in 1948.

Dr. Schwedenberg was a member of the Sussex County Medical Society, the Medical Society of Delaware, and The American Medical Association.

Besides his widow, Mrs. Elvira Schwedenberg of Seaford, he leaves a son, Theodore Schwedenberg of the University of Minnesota; a daughter, Mrs. Edward H. Wallach of New York City, and a grandson.

Services were held from the Windsor Funeral Home on June 26th, with the Rev. Walter H. Stone, pastor of Mt. Olivet Methodist Church, officiating. After cremation on June 27th, committal services took place on June 28th in Odd Fellows Cemetery, Seaford.

MEDICAL SOCIETY OF DELAWARE
Rehoboth Beach Country Club
REHOBOTH BEACH, DELAWARE

MONDAY, SEPT. 8, 1952

7:00 p.m.—Meeting of the Council

8:30 p.m.—Meeting of the House of Delegates

TUESDAY, SEPT. 9, 1952

9:30 a.m.—Invocation: Rev. William D. Gibson

9:40 a.m.—Address of Welcome: Hon. Robert D. Thompson.

9:50 a.m.—Report of House of Delegates: A. M. Gehret, Wilmington

10:00 a.m.—Surgical: Robert R. Layton, Dover

10:20 a.m.—Some Representative Results of Isonicotinic Acid Hydrazide, Therapy: Nathaniel Young, Dover

11:30 a.m.—The A—B—C of Antimicrobial Therapy: Hamison F. Flippin, Philadelphia

12:30 p.m.—Luncheon: Members and Guests Medical Society of Delaware

2:00 p.m.—Problems Affecting Mal-united and Non-united Femoral Shaft Fractures: Paul C. Colonna, Philadelphia

2:40 p.m.—The Present Status of Surgical Treatment of Carcinoma of the Esophagus: John A. Gibbon, Jr., Philadelphia

3:20 p.m.—Exhibits

3:50 p.m.—The Present Status of the Management of Urinary Tract Infections: Theodore R. Fetter, Philadelphia

4:30 p.m.—Dermatology in Relation to Chiropody: Reuben Friedman, Philaphia

4:45 p.m.—Metabolic Medicine in Relation to Chiropody: Anthony Sindoni, Philadelphia

6:45 p.m.—Reception and Dinner (Subscription)

9:00 p.m.—Address: J. Wallace Woodford, Dover

WEDNESDAY, SEPT. 10, 1952

9:00 a.m.—"The Physician and the Infertile Couple," Ottokar J. Pollak, Dover

9:40 a.m.—Horace R. Johnson, Philadelphia

10:20 a.m.—The Place of Newer Drugs in the Treatment of Arthritis: John Lansbury, Philadelphia

11:00 a.m.—Exhibits

11:30 a.m. —Presidential Address: Ervin L. Stambaugh, Lewes

12:10 p.m.—Election of President-elect for 1953 (Kent County)

12:30 p.m.—Luncheon: Members, Guests and Auxiliary, Sussex County Medical Society

2:00 p.m.—Endometriosis: Richard W. Te Linde, Baltimore

2:40 p.m.—The Diagnosis and Management of Uterine Malignancy—A Twenty-five Year Experience: George A. Hahn, Philadelphia

3:30-5:00 p.m.—Exhibits

WOMEN'S AUXILIARY, M. S. of D.
Hotel Henlopen

TUESDAY, SEPT. 9, 1952

10:00 a.m.—Registration

10:30 a.m.—Business Session. Guest Speaker: Mrs. David B. Allman, Atlantic City, Past President, Woman's Auxiliary to A.M.A.

1:00 p.m.—Luncheon. Guest Speaker: Mrs. John J. Williams, Millsboro: Washington Life of a Senator's Wife

6:45 p.m.—Reception and Dinner (Subscription) Rehoboth Beach Country Club

WEDNESDAY, SEPT. 10, 1952

10:30 a.m.—Business Session and Election. Inaugural Address: Mrs. Willard F. Preston, Wilmington

12:30 p.m.—Luncheon: Sussex County Medical Society, Rehoboth Beach Country Club

3:30-5:00 p.m.—Exhibits

Editorials

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Vol. 24 July, 1952 No. 7

Re H. R. 7800

The furore is over—at least temporarily. The objectors, including the AMA, to Section 3 of the original bill have suffered a defeat, but one that is mitigated to a certain degree, as will be made clear below. The "Socialized Medicine" sleeper in the original draft was first recognized by Marjorie Shearon, Ph D., the brilliant editor of the *Challenge To Socialism*, who, two days after the introduction of the bill gave the alarm that set off all the furore. Her comments on the final passage of this bill, reprinted with the editor's permission, are taken from the *Challenge To Socialism**, Vol. VI, No. 25, July 7, 1952, as follows:

At 6:00 p.m., Saturday, July 5, H.R. 7800 was rammed through both Houses of Congress. Despite solemn assurances by Senator George that he would not include section 3 (the "socialized medicine" sleeper), the bill, with the sleeper went through on skids provided by Wilbur Cohen. It was passed on what was expected to be the last day of the 82d Congress.

This is the most signal defeat the medical profession has ever suffered. Section 3, amended, is on the statute books for one year during which time Ewing's termites will dig in so deeply they will probably never be exterminated. The bill gives the FSA $540 million a year for the aged and the long-coveted disability examination program. True, examinations will be at the State level, but Ewing will run the program under his basic statutory powers and the new powers conferred upon him. Falk, undoubtedly, will set up his administrative machinery.

The medical profession, as a whole, did not heed our warnings any more than it did in 1950 when the assistance disability program went into effect without medical opposition That is nationalized medicine and a direct precursor to the present law which uses title XIV as a fulcrum for further Federalization of medicine. Physicians, in the main, did the wrong thing at the wrong time in opposing H.R. 7800. They were much too slow. What were they doing over the July 4 weekend when Cohen was working his head off?

Senator George surrendered after having promised on the Senate floor: "It is a matter of good faith on the part of the committee" not to report the bill with section 3. But "good faith" is a relative term in the halls of Congress; "politics has no morals."

While the Nation, including many physicians, was enjoying the long Fourth-of-July weekend, Congress was plowing through a dense legislative calendar. Conferees were meeting on many bills which had passed both Houses, but were in disagreement. That is the most critical time in the legislative progress of any bill. Anything can happen as the conferees sit around the table and engage in horse-trading. History is made in those secret deals.

On July 1 Doughton appointed himself, as chairman of the Ways and Means Committee, Dingell (D., Mich.), Mills (D., Ark.), Reed (R., N.Y.), and Jenkins (R., Ohio) as House Conferees. George appointed himself, as chairman of Senate Finance Committee, Connally (D., Tex.), Johnson (D., Colo.), Butler (R., Neb.), and Martin (R., Pa.), as Senate conferees. They did not meet for two days The timing was perfect for a final sellout.

When they got together, Wilbur Cohen ran the show, as usual. For years he has dominated Senator George and Congressman Doughton. Cohen bargains furiously and always comes off with more than he expected to get. This time his gains were enormous, despite the valiant efforts of Reed and his Republican colleagues.

Senator George also brought in Fedele F. Fauri of Michigan who had formerly served on the staff of the Senate Finance Committee. It was Fauri who briefed the press without revealing the inner meaning of the section 3 deal. Then, interestingly enough, after Fauri left the press representatives, it was a reporter from the left-wing **Washington Post** who continued to brief the other reporters. All made snappy remarks about the AMA. It is no wonder the press of the country is totally uninformed about the significance of section 3.

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*Shearon Legislative Service, 9127 Jones Mill Road, Chevy Chase 15, Maryland. Subscription $12.50 a year: single copies 25 cents.

Republican House and Senate conferees, under the strong leadership of Reed and Jenkins, held out against section 3. Senator George stood firm with the Republicans. But Doughton, on his last day in Congress after 42 years' service, made a strong plea for section 3. Wilbur Cohen offered compromises. George weakened, finally agreeing to include section 3 with certain amendments demanded by Reed. George said they could pass the bill and have hearings later—a futile gesture, wholly irregular. Two years ago he said if the Senate would pass H.R. 6000 they would then study the whole Social Security System. No study has been made.

The Reed amendment states that section 3 "shall cease to be in effect at the close of June 30, 1953," and that no waiver of premium application shall be accepted prior to July, 1953. Reed feels this so emasculates section 3 as to make it only a weak political gesture. However, it gives Ewing a one-year tooling-up period to establish the waiver-of-premium program. It authorizes him to enter into agreements with State agencies now administering assistance disability programs, vocational rehabilitation, or workmen's compensation.

States are to work out ways to initiate the Federal-State disability examination program and are to be reimbursed from the Trust Fund for all expenses. Ewing may override State determinations as to a person's disability or the duration of disability. Ewing will write the rules and regulations, pay for one year's expenses, and have veto power over the States.

The bill as passed will enable the States to build up a caseload of disabled persons, certified by physicians at the State level as being qualified to apply for waiver of premium under OASI next July.

In the House debate, Dingell gleefully shouted: "The waiver-of-premium principle is now in the statute." Damning the AMA, Dingell gloated over his Republican colleagues who had voted for H.R. 7800 on June 17. He gloried in the suspension-of-rules victory, saying: "We wanted it that way. We were going to have it passed as is, or nothing. We wanted to jab it down their throats and we did." He predicted there would be built up such a demand for the program that it would remain permanently and that AMA supporters in the House would be routed.

Events have again confirmed our predictions.

The comments of the AMA's Washington office, as presented in *Capital Clinic*, Vol. 3, No. 27, July 8, 1952 follow:

On Saturday, July 5, Congress enacted H.R. 7800, the social security bill, after Senate-House conferees had written into it a new section on disability which in effect postpones final decision on this controversial question until next year. This section is designed to waive payment of old age and survivors insurance premiums by persons who are totally and permanently disabled. The House bill gave the Federal Security Administrator unusual control over medical examinations for the purpose of determining disability. American Medical Association had objected to this as an unwarranted grant of power, but had not objected to other parts of the bill. The Senate bill had no provision at all for waiver of premiums.

Now only the President's expected signature is needed to make law the following compromise, worked out by conferees and approved by both houses.

1. A new disability section, giving **states** rather than the Federal Security Administrator control over medical examinations for the purpose of determining total and permanent disability. It is understood the procedure would be similar to that now in effect for medical examinations of needy permanently and totally disabled persons who wish to be certified for Public Assistance grants. BUT—

2. The section can't go into effect until Congress again has acted on it. This section (but not others) will terminate on June 30, 1953—one day before the date set for filing of the first claims. This self-contradictory arrangement was worked out to insure that full hearings could be held next year before the disability section could become operative. Chairman George had demanded that his Senate Finance Committee have this opportunity.

Finally, the comments of the Washington office, as given in Bulletin No. 54, July 10, 1952, follow:

The House and Senate adopted compromise legislation on Social Security Amendments (H.R. 7800) July 5, thus clearing the bill for Presidential approval. The bill's only provisions dealing with medical matters, known as Section 3, were revised to retain waiver of premiums and to provide medical determinations of permanent and total disability at the State rather than the Federal level. However, this section is wholly inoperative as it expires June 30, 1953, the day before applications for benefits could be received. Several of the conferees were quoted in the press as saying that the effective and cut-off dates being nearly simultaneous would make it possible for the new Congress to hold hearings next year and draft amendments, if found desirable, before the effective date.

Congressman Reed (R., N.Y.), who opposed the original wording of Section 3, advocated the adoption of the conferees report "because it eliminates the objectionable socialized medical feature of the bill as it passed the House. . . The House permanent and total disability provision is retained in name in the conference report, but it is completely inoperative. . . The whole section will automatically expire on July 1, 1953, unless affirmative action by the Congress to re-enact this provision is adopted. In substance the whole permanent and total disability section which was vigorously opposed by those of us who are interested in preserving the integrity of the medical profession in this country and who are opposed to the extension of federal authority over the medical profession, has been effectively eliminated."

There you have the sordid story, from two slightly different angles. Who won what? Who lost what? But the big question is: How will this bill read, by way of amendments, after the new 83rd Congress convenes next January?

Second only to speeding as an accident factor in 1951 was failure to respect the right-of-way.

1952
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THE CHILD MEETS A NEW WORLD IN SCHOOL

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I would like to discuss a very important topic centering about the child's need at adjustment to a new world when he goes to school for the first time. Up until he goes to school the child has rare opportunity to be away from his home and his parents for several hours at a time. He has been accustomed to the security of his own home. He can have the attention of his mother almost at his own whim and immediately at his every wish. Suddenly and abruptly certain demands are placed upon him when he must go to school. He faces a new and strange world—the world of school.

The responsibility for helping the child adjust to this new situation suddenly cannot be placed upon the child himself. The child leans heavily upon his parents in his earliest years. He draws a sense of security from his family constellation. For the convenience of discussing this problem let us arbitrarily divide the situation and consider first the child himself and then the parents.

Certainly it is artificial to separate the family in this manner. You all know how a family is disrupted when anyone of its members becomes ill. You all know for example the general change in the feelings of a family when the baby is sick or when the mother is in a hurry to clean up the house to get ready for guests. All these things are reflected not just by the individual who is concerned, who is ill, who is tense or emotionally disturbed, but the entire family feels as if they were but a single person.

None of us like the new. We all like the familiar. We all speak about the good old days. And, so it is with the child. A most practical point in helping the child face this rather dramatic change is to familiarize him about a month in advance with his new school. Take him over to the school. Let him go into the playground and play with some of the older children. Take him on a tour through the school. Introduce him to his future teacher. Get to know him or her yourself. This is a way to take the strangeness of the new situation and when the strangeness disappears, the fright will never occur. I am certain that most of us have been in strange, new situations, and have felt the insecurity and apprehension. Your children are like you, and this practical point of familiarization will certainly help them .

There is a natural maturing or change in a child when he reaches the age of 5 or 6. Children up until this age have been called somewhat humorously, but also with a certain amount of seriousness, "little savages." At the age of 5 or 6 a rather dramatic change occurs. The child suddenly seems to be "civilized." He is most anxious to please. He takes on certain manners and attempts to obey the rules of society much more easily than he did at first. It is this age which educators have observed for many years, which appears to be the appropriate one for beginning school. The child is ready. He is ready by dint of his own growing up. Of course, you realize that some children grow at an entirely different pace than others. Of course, each child grows in general and the statement already made about the changes which occur at the age of 5 or 6 is a generalization, and it is worth just that. The great philosophy of democracy is that of individualization, and the great principle behind psychiatry is this also. We must understand the rate of growth of each child.

The families who have more than one child well appreciate this. Some of the children will walk at 10 months and another at 14 months. This does not mean that one of the children was unusually precocious or the other retarded. It merely means that some of us grow at

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one rate and others at still another. Each person has his own peculiar way of maturing. Children then, although in general they are ready at the age of 5 or 6, may vary in their receptivity to this new world of school. .

Let us think for example of a most timid child. To him, although he is ready to be educated, his personality is such that he is more apt to be frightened and apprehensive of the school world than another child who is more gregarious and aggressive. The timid child for many reasons is more comfortable alone or with his family. He is threatened by every new person he meets, and if he is suddenly cast into the school situation unprepared, he is terrified by the 30 or 40 new children he must meet, and the new strange woman or man, who takes the place of his own father and mother. This child especially needs the support of his parents, who should be willing to give it to him. The aggressive or overly hostile child on the other hand enjoys going to school for still another reason. He seems to have boundless energy and reveals very little insecurity on the surface. He literally flies into things and perhaps does a little too much in this direction.

Each person handles his own problems in his own unique way. Some of us escape into daydreams and fantasies and build our castles in the air in order to gain our satisfactions. The aggressive and overly hostile child gains his satisfactions and acts out his own individual way of living by quarreling, fighting and tussling with reality. This child lets out his angry feelings particularly in the classroom with his colleagues and with his teachers. He needs help in understanding that the class room is not a threatening place. He has to understand that his schoolmates are not going to hurt him or molest him so that he does not have to strike out first. Very often in the perspective of the overly hostile and excessively angry child, we find a basic fear that others will attack them or others are better than they are in one way or another. They have a strong need to prove their superiority, and they do so in the muscular sphere.

The child with younger brothers and sisters poses certain problems when he goes to school which one does not see in the child who is the only child. Several children have actually expressed directly their fear that they will be cast out of the home, taken to school, only never to return. They have deep feelings already that their younger sisters and brothers are preferred to them. After all, the older children have been "king pin" for several years until the competitors came into the scene. School for them has a special meaning. It means that they are cast out of the home, excommunicated if you will, and given over to some strange person to be taken care of while little brother or little sister basks in the warmth of the familiarity of the home, and the love of mother and father. Children need reassurance then that, although we send them to school, we still love them and that they will return once the school day is done.

At this point I would like to diverge for one moment and mention the Governor Bacon Health Center. At the Governor Bacon Health Center there are 150 emotionally disturbed and maladjusted youngsters. These children have met the rigors of every day life by reacting with all sorts of difficulties and symptoms. Some of them are very angry at the world and perhaps justly so for the world has abused them. Others are tense, nervous, highstrung and fidgety. Because these youngsters cannot adjust outside in their community, it is necessary for them to come here, and by means of residential treatment of psychiatrists, psychologists, social workers, and teachers working together, they are rehabilitated We work hand in hand with their parents because we recognize the unity of the family and the fact that children do not live in a vacuum but in very close relationships to their parents.

Now let us consider the parents. You know the tremendous attention which is paid to the physical factors in the child's growth. You know how much attention you gave to the child's physical growth, his height, his weight, his vaccinations, etc. You gave a great deal of time into giving your boys and girls the proper diet and their extra vitamins and the like. It has been said that there are four ages of man. First, there is the chronological age, that is, how many years, months and days old are you. And then there is the physical age. How old is your body. For example, you can imagine a man of 60 who is still physically only 40. And then there is the intellectual age, the third age. How intelligent you are. We all know people who, because of mental deficiency, may be 12 or 15 years of age and yet intellectually on the level of 3 or 4. The last age, which is by no means the least and the one which in general has been neglected for the most part, is our emotional age, that is, how grown up are we in the way we think, feel and act. I feel that this has been ignored many times with the great emphasis on physical factors of growth, diet, sunlight, immunizations and all the rest.

The mothers know the pain that is associated with the physical separation of your children from you. The great pain and the other aspects of the problem give it the name "labor." Yet there is a silver cord, an emotional tie which connects you with your children and which is never severed by birth alone. The pain and labor involved here are never ended. What I mean is this—it is difficult to see your children grow up. Many mothers look upon their youngsters as pets whom they like to cuddle. They seem unconsciously to resent the child's walking and talking because it makes the child suddenly grow in their eyes, and the cuteness of a preceding part of a child's life is something to which they prefer to cling. I know many mothers who prefer to keep their children crawling and are driven almost to tears when the child starts to walk. There are some parents who prefer their children to stick to baby talk because again they cannot tolerate this natural and spontaneous growth process in their children. Many people have made the remark—wouldn't it be nice if children were born 25 years old, because they disliked the pain that is involved in the slow growth of the child. Many parents would like to hang a sign about the home in various portions as the child goes through his various phases of development. "This too will pass." And so in the going to school, a bridge of importance is crossed and many parents seem to resent that it even exists. Just think of the many weeping mothers I am certain you have seen on that first day of school. It appears as if both mother and child are weeping. It certainly appears that if the child needs support in facing this new strange environment, he seems not to have obtained it from his own parents.

Children reflect their parents thoughts, feelings and attitudes. Watch how carefully an infant reflects changes in your own expression. We know for example, that the babe in his mother's womb reflects her own feelings during the time of gestation. How much more powerful are the influences when the child is in this world already. The aim of parenthood on the other hand is to allow the child to grow at his own pace. You must accept the growth of your children.

There is no higher goal. To aim at a lesser height is inadequate. I have faith in this growth process which is to me the life process itself, and I have faith in the ability of parents. I am certain that all of the parents have the best of intentions.

It is necessary to confer with the children's teachers. Sometimes this is difficult because many of the parents will resent their intrusion into the life of the children and the family. This is only natural. Yet the parents and teachers can work together at planning some individual attention to the child. Should there be any difficulty, together teacher and parent can plan some means of seeking additional help for the child who needs it.

When the children grow, start school, and complete all the various landmarks of life and when they are happy, the parents will receive the greatest reward and deepest joy. The parents cannot do more and they cannot afford to do less.

FOLIE A DEUX — A CLINICAL CONTRIBUTION

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This report concerns a husband and wife who were admitted to the Delaware State Hospital on two different occasions, each time on the same day, both suffering from acute psychoses. The term "folie á deux" (insanity of two) is applied in instances when two persons closely associated with one another suffer from a psychosis simultaneously. The question then arises whether the simultaneousness implies more than a chronological co-existence of mental disorders, namely a common causal relationship. The clinical concept of folie á deux connotes such a relationship in a sense of "induced insanity." According to the traditional definition, this means the transference of delusional ideas from a psychotic individual to associates who have been under his domineering influence, and it may be extended to three or more persons. Henderson and Gillespie state "suggestibility plays a part, among other factors, in the genesis of folie á deux or 'communicated insanity,' which is the term applied when two persons closely associated with one another suffer a psychosis simultaneously, and when one member of the pair appears to have influenced the other. It is commonest in persons living secluded lives. Husband and wife, brother and sister, or parent and child, or friends of the same sex living closely together are the usual subjects of the condition. It is usually either a paranoid or manic depressive state."

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Kallmann and Mickey recently criticized the inclination, reflected in the current literature, to apply the concept of folie á deux indiscriminately to the co-existence of any mental disorder of a similar variety in two or more persons who seemed closely enough associated. These authors feel that the concept of folie á deux may be useful for the practice of counting in French, but meaningless from the viewpoint of psychopathology unless the concept is based on studies of the predisposing factors in the involved personalities.

The fact that folie á deux is a very rare condition clearly indicates that psychoses cannot be easily transmitted to closely associated persons,—no matter how distorted the interpersonal relationship may have become. The conclusion seems justified that a special vulnerability of an individual is a prerequisite for this condition. It is the aim of this study to find evidence of such vulnerablity in the participating partners whose case histories will now be presented.

Background.—Mr. B. Born 1903 in Wilmington, Del., the second of three siblings. According to the family, his early development was normal. However, he walked in his sleep considerably and it was necessary for the parents to have a screen door on his bedroom door which they could lock from the outside. He adjusted well scholastically and socially and he particularly excelled in mathematics. He was described as well behaved, quite sensitive and easily hurt. When older, he often seemed moody, even secretive and seclusive. He impressed all of his acquaintances as a serious individual, was studious, steady and a good worker. He had a streak of cruelty in him when he was a boy. He showed this by acts of cruelty with cats and chickens, and the family had to carefully watch the pets in the home. It is reported that his mother once broke down and cried that "she could not see why he was so different from the rest of the family." After completion of the 8th grade, he left school, became a machinist and, after a few years of training, worked for the same company throughout these years. One of the informants stated that Mr. B. failed to develop his interest in mechanics and engineering. He stuck to his job which, in the opinion of that informant, seemed rather monotonous and mechanical. Mr. B., it seems, stuck to it because he became progressively more restricted in his emotional life and this gave him the reputation of being narrow minded among his co-workers.

Mrs. B. Born 1906 in England, the oldest of four siblings. Se was brought to this country when 10 years old and grew up in the vicinity of Wilmington, Del. She got along well in school, finished the 8th grade and worked as a cashier in a local store for eight years. She was described as even tempered, good-natured, calm and well poised. It was also stated that she took her responsibilities very seriously and had always been inclined to worry over things. One informant stated that she always seemed too particular and wanted to do everything perfectly. She attended church regularly, read a great deal and seemed inclined to be introspective.

Mr. and Mrs. B. married 10 years before their first admission to the hospital. They had known each other 3 years prior to their marriage. It was generally assumed that their marriage was very congenial. There were no children and Mrs. B. seemed at times quite worried about this fact.

About a month prior to the first admission, Mr. B. became very much upset about union affairs at his shop. He had been made president of his union at a time when there were fights between this local union and the CIO to which Mr. B. was opposed. He became obsessed with the idea that the CIO wanted to dispose of him. He took two weeks' vacation to escape the pressure of matters but he became progressively more agitated, could not sleep at night and expressed fears of persecution, of being drafted and of being threatened by insanity. He discussed these problems almost continuously day and night with his wife, with friends and with the family physician. He finally became highly excited, his condition grew worse and his physician decided to commit him to the Delaware State Hospital. It was noted at that time that Mrs. B. shared his fears of persecution and became also tense and fearful. She complained of hearing voices talking to her about her husband and she cried that some harm would be done to her baby (she had no children at that time).

First Admission. Mr. and Mrs. B. were admitted to the Delaware State Hospital on July 29, 1940. Mr. B. appeared depressed, somewhat retarded in the psychomotor sphere, as a consequence of which he had difficulty in expressing himself. He complained of hearing voices, of feeling badly and he expressed the fear of losing his job because of his difficulties with the union. Treatments consisted of medication, hydrotherapy and supportive psychotherapy. He responded slowly, was still preoccupied for many weeks but seemed markedly improved in October. He went home November 2, 1940. When he left the hospital, he seemed to have a fair measure of insight. He recognized some of the emotional factors which had contributed to his illness and he showed a willingness for changing his life pattern to a more flexible one with more social outlets. He was diagnosed as a case of manic depressive psychosis, depressed type. However, many staff members were impressed with his rigid personality and felt that he had shown schizophrenic symtoms.

Mrs. B. appeared slightly depressed and perplexed by her recent experiences, but she talked with ease and seemed glad to unburden herself. She explained that she had heard voices which talked to her about her husband and she seemed very much under pressure by the recent events in her home. She responded well to supportive psychotherapy, participated almost from the beginning in all hospital activities and gained good insight within the first few weeks. She left the hospital on October 5, 1940. She was diagnosed "without psychosis, psychotic episode". It was felt that she had reacted with brief psychotic behavior to the illness of her husband and that she was basically a stable personality.

Interval History. Both adjusted well after returning to their home. Mr. B. returned to his previous place of employment, got along well with his fellow workers and became a member of the CIO. A daughter was born in 1945. Social workers visited the home from time to time and reported favorably about their progress.

According to informants both lived modestly, had little social life except for going to church quite regularly. One informant stated that "Mrs. B. became more particular; everything had to be done perfectly; she seems the type who worried constantly about such things as good manners and her speech; she was very introspective and always tried to analyze faults and feelings." She lived for her child, in fact, she had no outlets except in her home and in church. Mrs. B. complained during the winter of 1951-1952 of extreme tiredness yet she refused to consult a physician, developed the idea that other women were talking about her and were saying that she was crazy. She became so concerned about these faults that she did not go out of the house and would not sit by the window as she was afraid people would see her. Toward the latter part of the illness, she was beginning to keep the shades drawn. She talked constantly about her thoughts. However, her husband tried to reassure her. There were times when she seemed slightly confused, and she expressed the idea of having committed a great crime. She associated this with a church dinner where she had forgotten to serve milk to the children. Finally, she could neither sleep nor eat. When the family physician recognized Mrs. B.'s mental illness, Mrs. B. is quoted to have said to her husband, "You take care of yourself so you will not have to go to the hospital," to which it is stated, he replied, "When you go, I will be right behind you."

Throughout this period of Mrs. B.'s illness, Mr. B. attempted to help her. He seemed to understand her illness and he finally agreed to have his wife hospitalized. He agreed with the family physician that his wife should be admitted to the Delaware State Hospital on a voluntary basis. When the family physician came to the house in order to accompany Mrs. B. to the hospital, she found a startling change in Mr. B.'s behavior. He appeared hostile, peculiar and remained mute. He did not participate in any way when she made arrangements for hospitalization and remained home when they left for the hospital. Later the same day, Mr. B. was found to be rigid, mute and entirely negativistic so that he had to be committed to the Delaware State Hospital.

Second Admission. Both were readmitted on May 16, 1952. When Mrs. B. was brought to the hospital, she appeared extremely perplexed, tense and listless. She seemed unable to answer questions, walked around aimlessly, mumbled to herself and refused food and drink. She complained of a restriction around her throat and seemed very fearful. It was necessary to tube feed her. The tentative diagnostic impression was that of a perplexed type of depression, but further studies revealed her to be in a state of extreme depersonalization. When she failed to improve, electroshock treatments were started on the 10th day after admission. After 5 treatments, she became active, spoke with ease and was thought to be somewhat euphoric. She did not want to talk about her personal problems, rather seemed happy to be out of the state of depression and inner torture. She then relapsed toward the end of June and became again extremely withdrawn and perplexed. Electroshock treatments were resumed.

Mr. B. arrived in the hospital in a state of negativism. He kept his eyes rigidly closed, did not move or walk around, did not answer questions and did not accept food. He had to be tube fed. However, he remained in bed, stared at the ceiling and did not react to outside stimulations. When given sodium amytal intravenously, he smiled in a silly manner, did not respond verbally but by writing. His behavior remained unchanged, and electroshock treatments were started 4 days after admission. There was marked improvement after 3 treatments and he seemed to be his usual self after 5 treatments. He then discussed his situation freely with the physicians and explained that he attributed his illness to worry over his wife's condition. He could not clearly remember what had happened to him on the day of admission, and he did not seem too anxious to think about the events which had preceded his hospitalization. He has since remained in good contact with his physicians.

(At the time of this writing, Mr. and Mrs B. are still patients at the Delaware State Hospital).

COMMENT

Among the various interesting aspects of this case report, one stands out particularly: the recurrence of simultaneous phychoses. The fact that both patients could be studied at the same hospital on the occasion of both admissions aids greatly in obtaining a comprehensive picture of their personalities and their periods of illness.

In 1940 this appeared to be a rather characteristic example of folie á deux. Obviously —and this is reflected in the diagnostic formulations as quoted from the hospital records —Mr. B. "induced" his wife to share his fears and to participate in his delusions. She was, by virtue of being his closest associate, exposed to his mental illness,—was the passive partner under his domineering influence. Moreover, after admission to the hospital, removed from his imposing and disturbing presence, she rather quickly regained a realistic understanding of the situation.

Subsequent developments, however, cast some doubts on the simplicity of such an evaluation. While we know little about the inner life story of this couple, we know that Mrs. B., in 1940, in addition to participating in her husband's delusions, feared for the life of her baby which existed in her phantasy only at that time. Apparently, then, there was more in the content of her psychotic ideation than attributable to the process of transference of delusion by association with her husband.

During the twelve years interval a daughter was born and both lived apparently a harmonious life. Mr. B. continued on the same job and did little to bring variety in the rigid, austere and constricted home atmosphere. Mrs. B. impressed observers during those years as growing more preoccupied and self-doubting. We then see a gradual onset of her mental illness during the last winter months. This time it is her "own" psychosis. Her fears, her ideas of reference and sin reflect developments within herself. Mr. B. recognizes her illness and aims to help her. There is no indication that he was influenced by her delusions. On the contrary, he showed no signs of abnormal involvement until the moment of her departure. The abrupt onset of his psychosis, precipitated by the culminating tension over his wife's illness, presents features which are not in accord with the criteria for folie á deux. He does not share any of his wife's distorted thoughts nor does he seem to identify with, or imitate, her behavior. The recognition that Mr. B.'s second psychosis transcends the realm of folie á deux does not imply that one looks at the clinical picture as one of dual psychosis, coinciding in time but unrelated in origin. The symbiosis during many years of marital life has, as it must, influenced the inner development, normal or abnormal, of both partners. The question, then, is not one of accepting or denying the interrelationship of these psychotic reactions but one of attempting to find factors which enable these persons to react with the development of psychoses in situations of interpersonal stress to which the average person adapts himself in other ways. The search for such factors leads one to the assumption of specific vulnerabilities in the personality structures of the partners.

The histories reveal schizoid and anancastic trends in the personality of Mr. B., elements of passiveness and anancasm in that of Mrs. B. Such personalities, while not possessing any monopolistic claim to certain types of psychoses, are, nevertheless, known to be predisposed toward paranoid and depressive reaction patterns.

In 1940, Mr. B. seemed to be the one to worry about as his clinical picture warranted some prognostic doubts. He demonstrated since a capacity for resistance and his recent sudden phase of decompensation seemed to have the characteristics of a benign catatonic reaction. Mrs. B., on the other hand, in 1940 believed to be the more normal partner, now manifests a rather serious clinical picture of depersonalization, protracted in course and resistive to therapy. It, thus, can be said that each has shown two varieties of psychoses: one primarily situationally precipitated, the other originating in deeper spheres of the personality.

There are many surprising moments in these histories which could be used for speculation in favor of various theories on etiology. For the purpose of this presentation, it must suffice to demonstrate the complexity of problems associated with the diagnosis of folie á deux. In the literature on folie á deux the case of Mr. and Mrs. B. should find its place because of its unique aspects which indicate special vulnerabilities of the partners each of whom developed a psychosis, dependently and independently of the preceding psychosis of the other.

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THE KEY TO HUMAN BEHAVIOR

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Psycho-analysis has a two fold value which places it in the front ranks of the modern constructive sciences. First, it offers untold possibilities which are only beginning to be realized as a therapeutic and curative agency, for many baffling diseases. The ailments to which it affords cure or relief are not only of the mind for it has been found that a great many physical disorders which heretofore have been considered purely of an organic or functional character are merely physical reflexes of a neurosis. Relieve the mind of these all pervading neurotic troubles and serious physical disturbances are frequently removed. The mental disorders alone that respond to proper psycho-analytic treatment range all the way from trifling hysterical cases (which, however, tend to become more severe as the individual weakens under the increasing influence of a neurosis) to a definite psychosis usually and often of the schizophrenic type, which the old school psychiatrists have heretofore considered hopeless. Of course, any psychosis that is due to disintegration to the brain structure as sometimes occurs, is not amenable to treatment and results of treatment in these cases are not too reassuring. Psycho-analysis is not magic or alchemy but a rational science based on very definite natural laws.

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The second and in a way a greater function of psychoanalysis is as a cultural study for the self improvement and development of the individual. I emphasize its possible greater usefulness in this respect because, after all, only a small percentage of the population is insane and while the victims of neurotic disturbances make up a more important element of society numerically than is generally imagined, there is still a great mass of people who may be classed as "normal."

Psychoanalysis has revolutionized our former conception of human behavior. It has reinterpreted and thrown a vastly different light on the passions, loves, hates, fears and other primitive emotions of man. It has revealed in a startling way many of the heretofore inexplicable motives and actions of individuals. The deeper, underlying significance of seemingly inconsequential actions are often disclosed to the analytic observer in its true value; so far removed from surface indications. To the students of human problems whether the social, economic, industrial, psychical, physical, educational or what not, psycho-analysis is of incomparable worth. It leads the way to fundamental causes that heretofore have shielded themselves behind the impenetrable screen, and whose existence we have only guessed at in the misleading light of superficial appearances. There is scarcely any field of human endeavor to which this science cannot be made an invaluable aid. It is the key to the unexplored region whose portals we have just entered. It is the new lamp of Aladdin, whose light will be to guide us all the way to a better understanding and revaluation of human possibilities. People realize in an indefinite way that they "take to" certain individuals; that they tend to love or esteem persons of a certain type and to dislike and sometimes even hate another type without themselves knowing the reason why. Most of us are cognizant of the fact that there are unfortunate people, homosexuals or perverts, that society has very ignorantly gone out of its way to persecute and penalize because it has not understood the cause of their affliction. Their failure to experience sexual desire in the normal prescribed manner has been considered a deliberately cultivated or inherently vicious trait instead of a pathological condition. When the cause of an abnormality remains unknown there is invariably an irrational reaction to it. There was a time when the mentally ill were considered to be in a state of "being possessed by devils" and the victim of floggings and otherwise punished for their indiscretions in harboring the damned. Conventional society has modified its views and now takes it for granted that there are two kinds of people in the world, the sane and the insane and the latter is classed as hopeless and must be confined to the asylum until released by death. Psychoanalysis shatters this romantic theory.

It has been an enigma to the student of human behavior why the great masses of people remain so long in self satisfied contentment often under the most oppressive conditions. It has likewise been a puzzle why certain few individuals almost an ifinitesimal minority have always resisted authority and oppression, regardless of personal sacrifice. The pioneers in the radical and feminist movements and so forth illustrate this type. The martyrs of history who have died for various causes and ideals are the best known examples of this phenomenon.

Dreams have been the subject of controversy speculation and unlimited commentary throughout the ages. The real meaning and profound import of dreams were never realized until Freud's discovery demonstrated their vast significance and intimate relation to our life awake as well as asleep. Our forgetfulness and absent-mindedness particularly when involved in a subject or details with which we are quite familiar is very embarrassing, yet that there is an unconscious "motive" in forgetting these things that we know so well, or that causes us to suffer from slips of the tongue, and to read words that are not there in sentences; is now established. Everybody enjoys wit; and gets satisfaction out of a joke, particularly when it is on the other fellow. The significance of this type of manifestation is deeper and more involved than our matter of fact acceptance of it has permitted us to comprehend.

The atrocities of war committed by people who are believed to have been uplifted by the influence of twenty centuries of Christianity and many more centuries of cultural civilization are astounding to the casual observer. The ease with which a group of people, individually peaceful and law abiding is transformed to a destructive, even murderous mob; is seemingly incomprehensible. Still there are very plausible reasons for these phenomena which an understanding of the new psychology enables us to perceive and by understanding all of these and other important factors which a knowledge of psycho-analysis offers, we are better able to check and overcome our individual and social shortcomings, and to redirect our course along constructive lines.

A SCHIZOPHRENIC REACTION FOLLOWING A COURSE OF ACTH TREATMENT

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With the extensive use of ACTH in specifically indicated conditions many physicians have reported mental syndromes concurrent with the use of the drug. These reactions fall into two categories: (1) the delirious type of reaction due to the overwhelming toxicity of the drug, as might be seen in overdoses of drugs such as bromides, phenobarbital, etc. (2) the precipitation of a previously latent or dormant psychotic condition. As Brody pointed out in a recent article, emotional factors found in diseases treated with ACTH (periarteritis nodosa, lupus erythematosis, rheumatoid arthritis, etc.) indicate the presence of a psychosomatic component. It seems that the organic illness binds the conflicts and the anxiety within the individual. Once this organic condition, which acts as a defense mechanism, is alleviated or improved, the underlying heavy-laden conflicts begin to manifest themselves. Thus the equanimity of the patient's personality which was previously established is disrupted and a mental syndrome is delineated. It was further pointed out by Brody that Cortisone and ACTH act as a threat to the patient's equilibrium because of their abrupt hormonal, pharmacological, and psychological provoking action.

The following case study confirms the evidence of a possible psychosomatic component in a lupus erythematosis. The patient was a 29 year old female who had been treated for lupus for one and one half years by a well qualified dermatologist. She was hospitalized to receive ACTH intravenously. She remained in the general hospital for seven days and her skin condition was reported as considerably improved. While still in the hospital a definite personality change was noted. Whereas the patient had previously been shy and quiet she now became overfriendly, elated and overactive. She was discharged from the hospital improved.

At home the patient became euphoric, was unable to sleep more than two hours a night, insisted that all the lights in the house be turned on, began reading the Bible incessantly, and thought she was God. She was so difficult to manage at home that she required commitment to the Delaware State Hospital seven days after her discharge from the general hospital.

On admission she was too bewildered, overactive and excited to give any coherent account of the incidents that led up to her hospitalization. From her rambling, incoherent verbalizations there were suggestions that she was sensitive about her physical appearance, a conflict over heterosexual and homosexual feelings, difficulties in handling anger, and feelings of inferiority and inadequacy. On observation she talked constantly in a very loud voice and the associations were bizarre, tangential, and disconnected. She misidentified people on the ward, she was alternately tearful and dependent or combative, insulting and extremely demanding. When interrupted or temporarily deserted she became very hostile. She also was alternately obscene and prudish. On one occasion she insisted that she was Christ. She exhibited a marked ambivalence and expressed numerous neologisms. Because of the disorganization and disintegration of the ego a diagnosis of schizophrenia was made.

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In the course of reviewing the patient's past history it was noted that she was described by her husband as a quiet, shy individual who did not make friends easily. She was extremely sensitive and reticent, preferring to keep things to herself. She was over-meticulous in caring for her children and the home. It was noted that she had had a previous "mild nervous breakdown" when her husband went overseas during World War II. This "breakdown," which was short-lived, was characterized by depression, crying spells, self-accusatory ideas, and feelings of inadequacy. She received no psychiatric treatment and apparently made a recovery unaided by any outside source.

In her course at this hospital she developed full-blown persecutory delusions. She became extremely suspicious, felt that she was being poisoned and that rats and snakes were placed in her room to torment her. An effort was made to make contact with the patient through psychotherapy. However, she was so disorganized and the paranoid ideation so fixed that she was inaccessible and somatic therapy became necessary. She was given a course of deep coma insulin after she failed to respond to a course of electric coma treatment. She responded well to insulin therapy and after a period of five months was discharged from the hospital much improved. On subsequent follow-up she was doing well on the outside.

This case illustrates the need for a psychiatric work-up prior to the administration of ACTH in all those organic illnesses where emotional difficulties may be a contributing factor in the etiology of the disease.

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THE PSYCHIATRIC USE OF ISONICOTINIC ACID HYDRAZIDE

A Case Report

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E. H., a 42 year old negro female, was referred to Governor Bacon Health Center on April 7, 1952 because of Chronic Alcoholism. At the time of admission she was under the influence of alcohol and could give no reliable information concerning herself. She had lost touch with her family and had been living a semi-vagrant life, moving from one rooming house to another. During this period, which extended over six years, she drank excessively and lived with as few sober interludes as she could financially manage. She sought medical assistance finally when her physical health became so depleted that she was unable to care for herself.

Physical examination revealed a tremulous negress, who was confused and disoriented. She attempted to respond to questions but her speech was slurred, her answers incoherent and her attention could not be held. Temperature was 98.4°, pulse 76, and respirations 20 per minute. Her nutritional state was fair, her admission weight being 138 lbs., height 64 inches. She had multiple neurofibromas (Recklinghausen's disease). Examination of the head and neck was normal. Percussion and auscultation of the chest revealed an area of impaired resonance and bronchial breathing over the upper lobe of the right lung. The cardiocirculatory findings were normal. Blood pressure was 120/90. There was no enlargement of the liver or spleen. Kidneys were palpable, but not enlarged. There was no tenderness or muscle guarding during abdominal examination. The genito-urinary and endocrine systems were free of any pathological process. The neurological examination on admission revealed dilated but equal and reactive pupils, diminished patellar and achilles reflexes, ataxic gait, marked weakness of all extremities and tremor of the lips, protruded tongue and hands. Laboratory findings were within normal limits. Urine (4-8-52) amber color, acid reaction, specific gravity 1.019, Alb. faint trace, (5-12-52) WBC per hpf, CBC (4-9-52) RBC, 3.92 Hgb—11.7 gms, WBC 6.750, P.—61% L.—39%, BUN—15 mg%. Blood sugar —109 mg%. Kahn—negative. Sed. rate 46mm. X-ray of the chest showed an area of infiltration involving the right apex extending down to the second interspace. There was a large cavity approximately 1½ cm in diameter in the first interspace anteriorly. Sputum was not obtainable to examine for tubercle bacilli due to the patient's lack of cooperation.

The psychiatric examination revealed the

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picture of a toxic-confusional psychosis. However, during the latter days of the patient's mental illness, the clinical picture was strongly suggestive of a Korsakow-like state, especially in the presence of a retention defect and its confabulatory correlate. E. H. was disoriented for time, place, person and situation. It was observed from time to time, however, that the most constant sensorial defects were for time and person. The patient's mood was predominantly apathetic, though at times she was mildly depressed and retarded. On occasions, she attempted to match the mood of the physician on rounds, but her efforts were saltatory and poorly sustained. In late June, there was a period during which E. H. was suspicious and fearful. At this phase of her illness hallucinatory experiences, both visual and auditory, were most frequent and compelling. She attempted to escape several times through a window overlooking a porch and would pound on her door and demand or implore to be removed or released.

Her behavior pattern, except for short lived periods of disturbance and noisiness, was one of listlessness and preoccupation. She was indifferent to body needs, ignored the care of her person, refused to eat and would lie on her bed, unmoving, for hours on end. Stream of consciousness was slowed and productivity was minimal. She rarely initiated conversation and answered questions briefly or, if longer replies were indicated, evasively and in a fragmentary manner. The patient spoke of distressing dreams of animals and death. She described her auditory hallucinations as a murmur of unidentifiable voices which at times seemed to be discussing her, or as the voices of friends or relatives chiding or commanding her. For several weeks, she identified one of the psychiatrists, (J.A.F.), as her insurance collector and would perfunctorily discuss with him premium payments on her policy.

Course in the Hospital. The patient was placed in isolation and, during her first weeks at the Center, she was continuously febrile, with peak elevations of 101.4°, and pulse ranging about 90 bpm. She was frequently nauseated, had a dry, unproductive cough and lost weight rapidly. On April 10th, she was placed on streptomycin gms. 1 b.i.d. and P.A.S. 400 mg. daily in divided doses. Her temperature fell to normal, with occasional afternoon rises of 99.2° to 99.4° in May and June. She was lethargic and indifferent to food, so that forced feedings were necessary. Despite this expedient, her weight fell to 93 lbs. on June 19th, a loss of 45 lbs. in 10½ weeks. During this time there was no abatement of the patient's mental condition nor improvement of her affective status.

On July 3d, streptomycin was stopped and isonicotinic acid hydrazide was given in doses of 3 mg./kg. t.i.d. in conjunction with p-aminosalicylic acid 100 mg. q.i.d. By July 10th, temperature was free of any elevation and pulse and respirations were within normal limits. Her appetite improved remarkably and the patient had gained eleven pounds in weight by July 24th, a period of three weeks. There was roentgenological improvement of the upper right lung field, the cavity having diminished in size 50%, with a corresponding decrease in the area of infiltration. However, the patient's sedimentation rate (44 mm/1 hour) continued to be elevated.

In view of the tentative reports on the tuberculocidal and tuberculostatic action of the hydrazines of isonicotinic acid in vitro and in vivo, some degree of clinical improvement of the patient's pulmonary infection might be anticipated. The most remarkable aspect of the case, is, rather, the prompt and massive abolition of the psychotic picture. Within one week of the use of isonicotinic acid hydrazide, the patient was clearly and securely oriented, and all evidences of apathy and depression were replaced with a mild but persisting euphoria. She became more alert and physically active, began to notice her environment and to take care of her person. She was able to discuss her past history and to give an account of her illness. She described her period of sickness much as a dream state, with hazy but accurate recall for some incidents and complete amnesia for the most of her recent experience. Her patchy recall was in keeping with the shifting threshold of reality contact present in toxic confusional states.

DISCUSSION

The central nervous system effects of isonicontinic acid hydrazides deserve further observation and clinical trial for their possible usefulness in psychiatry. The production of a sense of well being, the elimination of confusion, apathy and sensorial defects and the improvement of appetite in the case of E. H. would suggest that it be given further trial in toxic, clouded and diliriform states.

In toxic doses, viz. 20 mg kilo daily over 10 to 15 weeks, the drug has produced signs of central nervous system irritability in laboratory animals, evidenced by tremor, ataxia, bradycardia, tachypnoea and, in some animals, convulsions. Furthermore, approximately one third of the oral dose can be demonstrated in the cerebrospinal fluid within one to six hours after administration. These findings indicate the speed of the drugs access to and effect upon central nervous system tissue. These observations and the results reported in the case of L. H. suggest that, whatever the modus of its effect on neuronal activity, in therapeutic dosage, isonicotinic acid hydrazide may perform a beneficial role in psychoses of toxic origin, whatever their specific etiology.

Summary

1. A case of tuberculosis, with toxic psychosis is presented.
2. The inferred effect upon a toxic-confusional psychosis, of isonicotinic acid hydrazide, exhibited for the pulmonary lesion, is described.
3. Further study of the psychiatric usefulness of isonicotinic acid hydrazines is proposed.

SOME ASPECTS OF IN-PATIENT PSYCHIATRIC TREATMENT OF CHILDREN

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Psychiatric treatment of children is, relatively speaking, a newcomer to the field of psychiatry; its inception, growth and practice have occurred almost entirely since the year 1919. In that year, the National Committee of Mental Hygiene began sponsoring Child Guidance Clinics in the United States, the first being that of Dr. Douglas Thom in Boston. At this time, August Aichhorn, a most intuitive and psychiatrically oriented educator, director of a school for boys with delinquent tendencies in Austria, was for the first time applying principles of Sigmund Freud to treatment of these disorders. During this same early period Anna Freud was beginning her brilliant work of developing the psychoanalysis of children. In these three springs and certain auxiliary springs we find the source of psychiatric treatment of Children.

Two approaches to the subject should be noted; namely, out-patient treatment and in-patient treatment. The former has attained the greater prominence both in the literature and in practice. In this country especially, the children's psychiatric clinics and the Child Guidance Clinics have evolved into highly integrated treatment teams. Experiment in, and refinement of practice of play therapy, psychotherapy, art therapy, group therapy, drama therapy, etc., have been taking place and have been duly recorded, abetted by the stimulus of the American Orthopsychiatric Association.

On the other hand, in-patient treatment has enjoyed relatively little definitive attention, and there have been only sporadic publications except those coming from the Orthogenic School of Chicago. The purpose of the present paper is to point out certain special aspects of in-patient psychiatric treatment of children.

One need not look far to find reasons for the paucity of published material in this field: the insufficient number of in-patient treatment centers, the fact that the first living-in institutions were largely oriented to the care of delinquents (more specifically their removal from society), the unfortunate reluctance of psychiatrists to work in these institutions, the added duties in a residential treatment center allowing less time for research and writing, and the fact that therapists in the first institutions for children had to begin with the most difficult cases for treatment in the entire field, namely the delinquents. Now that we have a few more residential treatment centers the need to differentiate between in-patient and out-patient treatment becomes more apparent.

Before going into this aspect of therapy it would be well if we had some uniform idea of what we are treating. Let us therefore review briefly the psycho-sexual-emotional development of a child and reasons for his becoming emotionally maladjusted.

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The main stem of the development of the individual's personality is the development of relationship with the parent figures; i.e., the parents or those who take their place. The infant first begins to experience human relationships when he feels the emotional warmth which accompanies the nutritive and sensual gratifications he receives from his mother's ministrations. He learns to return the emotional warmth and thus participates in his first human relationship. Within a few months the mother starts to train him to be clean and non-destructive, and he becomes faced with the possibility of losing the mother's love by displeasing her. Continuance of the mother's love pulls him through the vicissitudes of this trial, and the foundation-interpersonal relationship is cemented.

He then becomes aware of another person close to him, usually the father, and channels open up for interchange of warm feelings with the second person, facilitated by the first experience. He then becomes involved in the more complicated trials of trying to love one parent to the exclusion of the other, of identifying first with one and then the other. If bi-parental warmth continues unabated, he passes these trials (known as "resolving the Oedepal Complex") and is able to love two different people at the same time and also to permit them to love each other without his being jealous.

He now has a firm foundation for interpersonal relationships. He then enlarges his experience by forming relationships with other persons in his environment and then proceeds on the next business of forming relationships with other immature persons—playmates. These do not return his love so consistantly and, in fact, withdraw their love and approval daily, whenever he displeases them. With the ego-strength he has built in early successful relationships with his parents, and with the moral support he obtains from his mother, whenever he runs home crying, he passes these trials and is well on the way to what we call a "well adjusted personality".

Conversely the maladjusted child is one who has not followed a course approximating the one just described. He has not been able to form a good relationship with one or both parents. This may be because: (1) It is not safe to relate to the parent; the child's overtures to the parent are met with disappointment or rebuff; (2) The parental reaction is inconsistent, the attitude changeable and vacillating; (3) The parent is lacking in warmth, is perhaps a "cold intellectual" and has never provided the stimulus to arouse feeling-tone in the child.

This exposition has been made very brief at the risk of over-simplification in order not to digress too far from the main purpose of the paper. We return now to the consideration of residential treatment.

The first question that arises is: what are the indications for admissions to a children's psychiatric treatment center? As we know, for adequate psycho-sexual-emotional development a child needs to live in home, in the spheres of influence of his mother and his father. Why then is it sometimes necessary to remove him in order to facilitate this very development? The reasons fall chiefly under three headings.

1. *Inability of the home to change in accordance with the child's need.* The parent may be too rigid or too rejecting to change his damaging attitudes. The parent may be mentally defective or psychotic. Or the parent may be neurotic and from time to time become so involved in his or her own personal problems and symptoms as to be unable to give the child the emotional support he needs. In this case it is advisable for the child to be admitted to the treatment center while the parent is undergoing psychiatric treatment.

2. *The child's fear of warm relationship.* Let us suppose a child has always lived in an environment so unaccepting, that his every contact with people has met with rejection, even unkindness. Now, if the child's parents should miraculously reform, or (which is much more plausible) he should be placed in a good foster home, he is unprepared for the parent-child relationships in which he will be expected to participate. He has never learned to relate to parents, and when the new parents offer affection he meets it with panic or flight or withdrawal. Or perhaps he acts out

his anxiety with hostility which is the only means of expression he has learned from his previous parent-figures. Even the best foster parents may be unable to endure these symptoms in a child, and become too anxious about their own apparent failure. Consequently, it is necessary for the child to be placed for a time in an environment such as a residential treatment center, where he can slowly and experimentally form inter-personal relationships in a dilute form; where the personnel are trained to wait until the child can accept affection and can offer warmth of feeling without expecting it in return. The child may start to relate to people by trying out some member of the personnel with whom he has only brief contacts before he can accept the house parent with whom he spends the most time.

3. *The child's symptoms may be such as to cause the community to reject him.* This is especially the case with anti-social symptoms such as stealing and fire-setting. Whatever the reason for community rejection, out-patient treatment is apt to be unsuccessful. It is manifestly impossible for a child to maintain any effects of therapeutic interviews if the intervening time is spent being ordered to leave by unfriendly property-owners being chased by children not allowed to play with him, and being continually dragged into the police station for offenses which he did or did not commit. It is to be hoped that this category of admissions to institutions will steadily diminish as the efforts of the Mental Hygiene Movement increase public understanding of these problems. However, the public will probably always have some fear of the dissocial act, and rightly so, in our present civilization.

The next question that arises is: What does residential treatment have to offer that out-patient treatment does not? Both in- and out-patient centers offer individual therapy and group therapy. In addition, the in-patient center has the added advantage of environmental or Milieu Therapy. As has been pointed out by Bettelheim "certain children cannot be treated successfully if they continue to live with their parents. Psychotherapy obviously cannot lead to any real growth if the child cannot safely apply the immediate or final results of the therapeutic experience to his day to day life at home."

Environmental, i.e. treatment by the total environment tries to offer the place where therapeutic results may be applied. Environmental Therapy has three aspects:

1. *The effect of the place itself.* This is significant though of less importance than the other two aspects. "The place itself" offers freedom from external pressure. The child does not have to be hungry or forage for food. The police will not arrest him here. There is plenty of room to play without trespassing. The school is ungraded and there is no shame of not being promoted. There is a general air of acceptance pervading the place.

2. *The effect of the adults.* As has already been pointed out the adults offer opportunity to form personal relationships at the rate which the child is able to utilize. In their supervisory capacity they offer protection from excessively aggressive children, and ego support to the shy.

The child uses whichever member of the personnel he can, though the set-up is such that the house parent is usually the key figure. The house parent is the substitute parent or as much of one as the child can use. He or she offers: 1. warmth, necessary for the child's emotional growth. 2. Dependability, to provide for the child's dependant needs. 3. A model for super-ego development.

3. *The effect of the children on each other.* This is similar to the normal processes which take place spontaneously in the social growth as children play together anywhere. Normally, the child who tends to be too aggressive will find himself punished by other children either physically or by disapproval and refusal to play. He then learns to conform in order to be accepted. The weaker learn to join their strengths together and so limit the aggressive ones.

Some children have not gone through the earliest phases of developing personal relationships as described above. These children are unable to learn from other children when left to their own devices outside of the institution. Here, however, there are understanding persons to facilitate the process by stepping in when aggression goes too far and by assisting the weak and timid. There are some children who require merely removal from an abnormal environment inhibiting their emotional growth, in order to proceed to develop in the treatment center milieu. Others require a preparatory stage in group therapy, while still others require individual therapy in order to remove the emotional blocks preventing their growth in personal relationships.

Summary

I have attempted to give here some special aspects of in-patient psychiatric treatment of children, including criteria for admission to a residential treatment center and discussion of the elements of environmental therapy.

PSYCHOSIS FOLLOWING INGESTION OF METHYL ALCOHOL

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A brief resume of the history of a 48-year-old negro, who was admitted to the Delaware State Hospital for the first time on July 27, 1951, reveals no previous psychosis.

He completed 9 grades of schooling. He is the father of 4 children. His wife died in 1947. Following the death of his wife he drank alcohol regularly. He had been living in common law relationship with a woman prior to his hospitalization. His employment record was satisfactory in jobs ranging from farm laborer to construction work and more recently he worked for a poultry concern.

In the spring of 1951 he went to a general hospital for what he stated were feelings of fatigue which patient thought were from overwork. Actually his admission there in April, 1951 followed intoxication with methyl alcohol and during the time that he was in the general hospital he had marked acidosis and azotemia, both of which eventually cleared up. In cases of methyl alcohol poisoning there is usually a pronounced acidosis. The serious effects of its poisoning, not seen after ethyl alcohol, are of two kinds, viz., atrophy of the optic nerve with permanent blindness and depression of cardiac and voluntary muscle, sometimes resulting in death. The latter may follow symptoms of profound collapse. The main residuum in this patient was bilateral optic atrophy and total blindness.

Psychotic symptoms followed his discharge from the general hospital and were noted in the follow-up treatment in the out-patient department of the general hospital. As brought out by some authors, methyl alcohol seems to have an affinity for the central nervous system, optic nerve, respiratory center and vagus nerve. The clinical picture is often thus one of accumulating injury to the nervous system.

This patient became acutely psychotic and believed that people were coming in and threatening to kill him, to cut his throat, etc. He was admitted to the Delaware State Hospital by regular commitment papers on 7/27/51. It was patient's impression that he had lost his vision suddenly one night. Fears originating from his blindness caused mounting tension, suspicion and anxiety.

Physical examination showed him to be 6 feet, 4 inches in height, and weight 150 pounds. He was of good nutrition and muscular development. The blood and spinal fluid examinations were negative as were the rest of the laboratory tests. X-ray examinations were negative.

An eye consultation on 10/1/51 revealed the following findings: OU pupils fixed, dilated. Fundi, media clear. Complete primary atrophy both discs. Arteries narrow with perivascular sheathing.

He remained well oriented for time, place and person and his verbal facility remained unimpaired. In fact, he frequently gave the impression of having developed some compensatory mechanism of an actual increase in his verbal facility with even, at times, some mild pressure of speech.

A characteristic symptom which increased in intensity was his fear of being pursued, particularly by men who he believed wanted to harm him. He also mistrusted the fidelity of his common law wife. He was friendly and always ready to speak freely about his condition.

Having suddenly been rendered incapable of caring for himself as he had been doing, the shock was severe and also created an underlying fear that people would take advantage of him because of his blindness.

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He has shown interest in any possibility of regaining his eyesight by operation if this would be possible. Depressive feelings, although never entirely absent, were not marked.

He improved to the extent of gaining better control of himself after his fears and delusions left him, so that he was able to leave the hospital on trial visit after hospitalization of 3½ months. He did satisfactorily at home, with the assistance first of the Delaware State Department of Public Welfare and later of the Blind Commission, until 4/10/52, when it again became necessary to have him return to this hospital.

This time he was brought in at night and was vividly delusional and hallucinated. He spoke incoherently and appeared to be responding to both auditory and visual hallucinations. There was psychomotor excitement with profuse perspiration and coarse tremors throughout his body and extremities. Sample verbatim: "Did they say who it was? Oh no, that's balony, that's balony. Here's what I should do. I should take that now."

Accidentally aroused stimuli, such as hearing the personnel or patients talk, caused patient to make remarks which were thought associations that were brought out by these stimuli.

He received 100 mgm. of thiamine hydrochloride by intramuscular injection daily for 3 days after his first admission. Sodium amytal, grs. III, orally, produced satisfactory sedation and was given daily for a few days. He also received 2 vitamin B complex tablets b.i.d. for 1 week. Occupational therapy, in addition to psychiatric interviews, proved helpful and he found diversion in attending with groups some ball games on the hospital grounds. He is at present permitted to walk on the hospital grounds with the properly responsible personnel.

His improvement has persisted, his sensorium is clear and he is at this time spontaneous and free of delusions and hallucinations.

In summary, this case demonstrated a psychosis and total blindness following the ingestion of methyl alcohol. The psychosis described was that of a paranoid state. There was no intellectual deterioration noted.

He responded well to treatment and left the hospital on trial visit.

He was readmitted to this hospital when acute psychotic symptoms developed in April, 1952. His present condition is favorable.

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A CASE OF ANAL CHARACTER FORMATION

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The prevalence of anal character formation in modern times, and the "drive to become wealthy" present a particularly good field for the investigation of the relation between social influence and instinctual structure. This relation has many subtle ramifications. The insight that money unconsciously is equated with feces has sometimes been misapprehended to mean that the institution of money was created for the purpose of satisfying anal-erotic instincts. But money fulfills a very rational purpose and the actual function of money, rather, influences the development of anal erotism. Instinctual ideas of retention become connected with money matters or develop into a desire to attain wealth only under the influence of specific social conditions. However, social conditions also determine the importance and relative intensity of instinctual ideas of retention. Social institutions influence the instinctual structure of the people living under them through temptations and frustrations, through shaping desires and antipathies. It is not a matter of the instincts being biologically determined, whereas the objects of the instincts were socially conditioned; it is rather that the instinctual structure itself, particularly the relative distribution of libido between genitality and pre-genitality depends upon social factors. The individual structures created by institutions help conserve these institutions.

The correlation of certain traits of character with definite eroticisms was the first discovery of psychoanalytical characterology and its most widely studied phenomenon. According to psychoanalytical theory, anal instincts, under the influence of social conflicts around training for cleanliness, change their aim or object, thus becoming incorporated into the ego. Anal character traits have developed in place of anal erotic instincts.

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The following is an illustrative case: T. K. entered the Governor Bacon Health Center on August 13, 1951 with the complaint of involuntary diurnal soiling and nocturnal enuresis. The mother, who brought the boy, described his soiling problem readily. She said that about three years ago, when he was seven or eight years old, he rather suddenly started to soil himself frequently. He not only soiled himself involuntarily, but he seemed to be unaware that he had done so, even when she called it to his attention. The mother had tried various forms of punishment such as switching, keeping him indoors from play for several hours and making him wash his own clothes. She does compel him to wash his things, but the mother has given up the switching upon the recommendation of the doctor who pointed out that it was not helping. At first the mother thought that the soiling was just a bad habit that would clear up, but it has since grown worse to the point where she is unable to take him anywhere in society because he will invariably soil himself and offend others.

The mother told that bowel training had originally been accomplished rather easily at what she considered a fairly late age. Then ("He was about a year old—all of a year old, because I had trouble with him telling me when he wanted the potty.") She spanked him and told him he was too old to soil and in this way he was soon trained. After the mother went out to work she thinks the training he received was inconsistently applied at home for that reason. However, it was not until the boy was seven years of age that the soiling reappeared. He apparently did not soil in school, as far as the mother knew, because the teacher had never complained to her. The mother could remember no illness or other upsetting incident concurrent with or prior to the appearance of the symptoms. Soiling was never a problem with the other children, but otherwise all three wet their beds rather frequently and had done this all along, too. T. sometimes goes a whole week without wetting. His mother says it has been easy to make him stop this; she says she will whip him if he wets, and so he doesn't.

On his admission T. appeared to be a nice looking colored boy; he was very polite, conforming, neat and clean, quiet and respectful. When asked if he knows why he came, he says dutifully: "Yes Maam. About my bowels." He is conscientious, although reticent in telling of his troubles, stating that he moves his bowels without meaning to, and when he goes to some one else's house he doesn't have that trouble. He showed no difficulty in separating from his mother and expressed no feeling concerning having to live away from her. He is reluctant to speak of his father. On the whole he gave the impression of being an overly trained boy with little or no warm feeling for his mother and repressed hostility for both parents.

For about two weeks following T.'s admission he was able to keep himself clean and no evidence of soiling could be found. However, a relapse took place thereafter and there were many evidences that T. was soiling both his day and night clothes and making some half-hearted efforts to keep this knowledge from the house parents. His soiled clothing always seemed to get found quickly, however. He was examined carefully by the neurologist who found he had normal tactile pain and temperature sensation in the entire lumbosacral radiation. The external anal sphincter also had good tone. There appeared to be no spinal cord lesion to account for the soiling. So far as his coprophilia goes, such has been T.'s course during his residence here over the past 11 months. During the last several months of his stay here he soiled less frequently and became more circumspect in hiding his soiled clothing so that his deficiency was not evident to his colleagues, and generally was detected only by the house parent who found his soiled clothing concealed in out of the way corners.

T. was always able to talk spontaneously but it was obvious that he took command of the conversation immediately, so as to be able to control it and guide it away from what were to him dangerous areas. The same phenomenon was noted in his therapeutic play activity. He was adamant in holding himself aloof from such fecal-like substances as modeling clay and mud and finger paints which were offered to him. He required that the therapist go walking with him and sought thereby to control both physical and verbal dangers inherent in his treatment process. Much of his talk concerned money and money matters, the earning of money and spending it for material things. T. seemed obsessed with the necessity to possess objects. The depletion of material comfort in his own poverty stricken home was a source of distress to him for which he compensated by a fantasy involving the possession of gifts and other material things in great abundance. The generosity and light heartedness mentioned by his mother were not so much in evidence here. In structured activities and routine tasks he got along fairly well with his household colleagues, but even in these activities often became sullen, stubborn and unsociable. He would break the rules of the game and impede the progress of play with subtle underhanded methods. Although seldom engaging in the rough and tumble of spontaneous play, or in the expected fighting among boys of his age, he succeeded in venting his hostility on his colleagues by false reports, invidious comparisons and insinuating accusation.

COMMENTS ON THE PROGNOSIS IN GERIATRIC PSYCHIATRY

A. E. Scheflen, M. D.,*
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After about the sixth decade senility and arteriosclerosis may lead to brain lesions associated with psychoses of the "organic" type (1)(2). These lesions are irreversible. Some physicians have concluded that the clinical course of the associated psychosis must be relentlessly progressive and the prognosis hopeless. In addition this outlook has been extended to any mental illness in the elderly patient. Such pessimism is often unwarranted. It may embarass the physician, pain the patient and his family, discourage therapy, and stunt the growth of preventative geriatric psychiatry. The increasing proportion of elderly people give this issue considerable importance. The histories to be presented illustrate some pertinent considerations.

In the first patient the clinical picture was that of an agitated depression without evidence of organic psychosis and the patient responded to electroconvulsive therapy despite the fact that she was 78 years of age and had diabetes, hypertension and arteriosclerosis.

Case 1. The patient was born in Russia in 1874 in a strict, religious family. Her first marriage ended in divorce when she could not leave her family and live with her husband. The second marriage was described as unhappy. She had life long neurotic traits including much conflict about expressing hostility and about dependency, jealousy, hypochondriasis, and obsessions. The symptoms were aggravated by the death of her husband in 1930 and again in 1945 after cataract extraction. Since 1930 she had recurrent depressions. In November 1951 she made several suicidal attempts.

On admission to a psychiatric hospital she was deeply depressed with motor retardation and underproductivity of speech. She was agitated and preoccupied with morbid ruminations and somatic delusions. There was no evidence of memory loss, confusion, disorientation or intellectual deterioration. She had several self-inflicted lacerations on the neck and wrists.

The clinical picture resembled that seen in the involutional period. Physical examination showed a blood pressure of 238/100 with cardiac enlargement. The EKG revealed myocardial damage and a first degree heart block. She had moderate peripheral and retinal arteriosclerosis, diabetes, a mature cataract, and senile changes of the skin. The depression was so severe that suicide and self-starvation were a grave danger. She, therefore, received five electroconvulsive treatments. The depression quickly disappeared. In the next six weeks there was gradual improvement in her demanding, dependent, and hypochondriacal symptoms. No symptoms of organic cerebral damage appeared at any time. The daughter reports a much improved adjustment at home.

The second patient had advanced presbyophrenia of ten years duration but after admission she had a surprisingly good spontaneous remission.

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* A former member of the medical staff of the Delaware State Hospital.

Case 2. The patient allegedly led a happy, active, out-going life without psychiatric symptoms until the age of 63. At that time she was supposed to have been exposed to some sort of fumes which led to her psychotic symptoms. This episode appears to be a delusion or a rationalization shared by the patient and her husband. She began to isolate herself at home to avoid the odor of other women's perfume. She misidentified others and for six years believed that her husband was her brother. She had episodes of unconsciousness presumably due to cerebral anoxia. She was overactive at night and often required forcible restraint by the husband. She became increasingly erratic, confused, deluded, incoherent, and forgetful. Her husband a very dependent and guilt-ladened man resisted hospitalization until April 1952.

On admission she was agitated, overactive, paranoid and combative. She was completely disoriented, very confused, and markedly defective in memory. She perseverated and confabulated. She was a most difficult problem in ward management constantly trying to break windows, batter down the doors, attack others and injure herself. A few days later she became more amiable and she constantly sought attention and engaged in childish, pointless activity. Physical examination showed peripheral and retinal arteriosclerosis, a blood pressure of 200/104 with moderate cardiac enlargement, and senile changes of skin, hair, and eyes. She was very deaf. Lumbar puncture, X-Rays of skull and chest, and laboratory studies including blood urea nitrogen and blood sugar were negative. The tentative diagnosis was, "Senile Psychosis, Presbyophrenic Type". The prognosis seemed very poor. Gradually she became quiet and composed and sensorium became clear. Three weeks after admission the only symptoms were defects in memory which were not marked. She received no specific therapy. The improved state has lasted thus far for two months.

Many psychoses with cerebral arteriosclerosis enjoy long remissions. In some patients symptomatology may vary week to week from profound confusion and disorientation to complete lucidity. Two points are noteworthy in explanation: (1) cerebral circulation, decreased in psychoses of senility (3), may vary with changes in vasomotor tone, cardiac output, oxygen carrying capacity and other factors; and (2) psychological factors, discussed by Rothschild (4), are important even in typical "organic" cases. In yet unpublished studies we could not demonstrate correlation between the severity of neuropathologic changes and intellectual deterioration.

The third patient had an operable brain tumor. The prognosis seemed hopeless and she was not treated because of a mistaken diagnosis of senile psychosis.

Case 3. A 73 year old woman was admitted to another hospital in 1947 with a history of forgetfulness, confusion, inappropriate behavior, visual loss and headache for two years. On admission she was imperfectly oriented and mildly euphoric with memory defects and delusions. She showed inappropriate levity and wisecracking. Physical examination showed generalized arteriosclerosis and senility. Careful neurological examination, retinoscopy, and lumbar puncture were apparently not done. In the subsequent three years she became progressively disoriented, out of contact, incoherent, incontinent, and debilitated. Bilateral pyramidal tract signs were attributed to arteriosclerotic softenings. The diagnosis was, "Senile Psychosis, Simple Type". Autopsy revealed increased intracranial pressure and a large meningeoma of the right olefactory groove.

The fourth patient, evidencing the clinical picture of a mixed senile and arteriosclerotic psychosis, was found to have a profound anemia secondary to carcinoma of the cecum. Surgical and medical treatment of this lesion was followed by remission of the psychosis.

Case 4. A 76 year old widow lived in social isolation. For several years she had been known to be suspicious of others and forgetful. On one of her daughter's occasional visits she found the patient disoriented, confused, deluded, incontinent and very undernourished. On admission to a mental hospital she was disoriented, confused, agitated, deluded, and very weak with emaciation and dehydration. Physical examination also showed senility, arteriosclerosis, an old hemiparesis, and marked anemia. The red blood count was 2,800,000 and the hemoglobin about 40 per cent. Observation revealed melena. A mass in the right lower quadrant proved at operation to be a papillary carcinoma of the cecum. The ulcerated mass was removed. The anemia responded to medical treatment and her general condition became good. The psychiatric symptomatology concommittently disappeared except for defects in recent memory and syncopal attacks and she was discharged in the custody of her daughter.

Similar aggravations of arteriosclerotic and senile psychosis with anemia, auricular fibrillation, congestive heart failure or other somatic illnesses have responded in my experience to medical treatment. It appears that cerebral anoxia, already present in these aged patients, can become critical when other conditions decrease circulatory efficiency.

Before handing down a hopeless prognosis or electing custodial care in the aged psychotic patient it seems wise to: (1) look for and manage phychological factors as at any other age; (2) be certain of diagnosis, and (3) recognize and treat any associated conditions especially those prone to produce circulatory impairment. Even when no such factors are demonstrable and the mental status indicates severe cerebral damage, unexpected improvements may occur.

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AN ALCOHOLIC AND AMNESIC PATIENT TREATED WITH CARBON DIOXIDE

A Case Report

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Mr. O., a 36-year-old white married master electrician was admitted to the psychiatric service of the Veterans Administration Hospital on May 5, 1951. His symptoms were "black out spells" associated with alcoholism present for the past eight years. He had not been "what you'd say a heavy drinker" until he returned from overseas in 1944, at which time he started drinking a great deal. He wanted to stop and couldn't, though he tried frequently. Without alcohol he became extremely nervous and shaky; "whiskey was the only thing that would help it." He consumed in addition to beer and mixed drinks, frequently as much as two fifths of whiskey a day.

In 1945, shortly before discharge from the service he had come home on furlough. He remembered sitting in the living room at home. Then, the first thing he knew he found himself walking up and down in the hall outside. He did not know where he was nor how he had got there. This, he said was his first "black out spell," and must have lasted at the most a few minutes. The next one occurred several weeks later in Kansas where he was separated from the Air Corps. This period of amnesia lasted all day. He frankly admitted he had been drinking quite a bit at the time. Since then he has had innumerable amnesic episodes of short duration, always appearing in conjunction with his drinking. These episodes were becoming more frequent and more prolonged. He described the last "black out spell" in some detail:

"I left the house in the morning to go to work at eight o'clock; went out; got in the car; picked up my rider and went down to where I work on a construction job. I pulled into the parking lot; and then said to him: 'To hell with it. I'm not going in'! I remember leaving the parking lot and going up to the place where I drink. They weren't open yet. I waited an hour; then went in and had some drinks. After that I don't remember where I went. Three days later when I came to myself I was in Washington, D. C. The part that gets me is: There I am driving my car, I go on a drunk and I never get locked up. How do I do it? Sure, I have been locked up around home for drunk and disorderly conduct. Somebody bothers me; a fight starts and I get locked up, but then I know what I'm doing; I know what's happening. I have never said anything to my wife about this. If she says anything to me about it I tell her, 'Well I've been drunk,' and pass it off. But, the way it is lately it's got me a little bit worried. There's no warning. If there was I could lock myself up or something."

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The patient's past history revealed the following: His father had died when the patient was extremely young. His mother died when he was twelve years old. He and his only sibling, a sister five years younger than himself, had moved into the home of an aunt who had other relatives living with her and whose husband was a poor man. He had completed three years of high school at the age of 18 and then decided that he should get out on his own and go to work to relieve the financial stress in his aunt's home. He later took some courses and received a diploma. He married when he was 21 and now has a daughter 13; both wife and daughter are in good health. He learned the trade of an electrician, worked steadily and did well before entering the service in 1942. He spent several years in the European Theater where he held the rate of a Staff Sergeant. Only once was there any disciplinary action brought against him. He had been "over the hill" for a week; received only company punishment and was confined to the post for a short period.

After discharge from the service his work record was exceedingly sporadic. Good when he was sober. Terrible when he was drunk. He had developed a definite pattern. He would work for a short period, "quit the job, get the money and drink it up."

Mental status examination at the time of admission revealed a robust, neat, agreeable man who appeared his stated age. There was evidence of over-powering anxiety, necessitating sedation, occasionally he would burst into the doctor's office without knocking, unheedful of the fact that another patient was already there. At times he was flushed, perspired profusely and described "unbearable" tension; a feeling that he was at "his wits end", that he couldn't stand it another minute. His sensorium was clear at all times. His mood seemed appropriate. There was no evidence of pathological elation, nor depression. No evidence of hallucinatory nor delusional material wos obtained. In no way was he thought to be psychotic.

Physical examination, including complete neurological evaluation, was entirely negative except for mild hypertension. BP 156/100.

Routine laboratory work, x-ray studies and an electroencephalogram were all within normal limits.

A psychological report based on the Shipley-Hartford Retreat Scale, the Rorschach Personality Diagnosis Test and Draw A Person Test indicated that the patient was: "Basically a character neurotic with some hysterical features, that he had an extremely immature personality and a strong need to prove himself virile and acceptable. That he was highly impulsive and might be given to explosive behavior under emotional pressure. Psychotherapy seemed questionable since it would not appear that he had the ego structure necessary to develop a lasting insight."

Fifteen days after admission on the basis of clinical, physical, psychiatric and psychological studies, the patient was placed on carbon dioxide—oxygen inhalations, the gas being administered in the usual proportions of 30% CO2 and 70% O2. Following the fourth treatment he began to show remarkable improvement. His "tension" subsided, his anxious outbursts disappeared. He slept well without sedation. He felt like a "new man." After this he was allowed to go on week-end passes during which his wife reported "tremendous improvement" including the fact that her husband had not taken a drink while he was at home.

A total of 14 carbon dioxide treatments was given over a period of twenty-four days and he was discharged immediately after their completion on his thirty-ninth hospital day. He obtained an excellent job during the first week after leaving the hospital; and on three occasions since discharged, he has returned for follow-up examination. His adjustment to his work and his home seem better than they have been for at least ten years. He has not drunk for three months, nor apparently had any tendency to do so since he has faced all of the situations in which he formerly could not have resisted the compulsive need for alcohol.

Conclusions

This patient came to the hospital for treatments under desirable circumstances; voluntarily, sober and "worried", because of a frightening symptom which he associated with his alcoholism.

A number of things seemed to contribute to the beneficial results obtained. Initially he discovered that his acute attacks of anxiety could be alleviated by psychiatric measures, with the result that he felt a considerable lessening of tension. Something was being done for him. His positive feelings toward his treatments increased. Finally, when he was allowed to go on week-end passes he felt that not only was he benefiting from his treatment but also the doctor trusted him and respected his judgment. He definitely became a partner in his therapy. Immediately after each treatment his first words were, "How are *we* doing, Doc?"

This case is not presented as an example of a method for treatment of all alcoholics, nor even as a permanent cure of the patient discussed; but as an interesting and clear cut remission in a patient who was formerly making an extremely poor occupational and social adjustment. The final duration of the remission is yet to be determined.

49 MILLION AMERICANS
VOTED

BUT—

47 MILLION AMERICANS
STAYED HOME!

And the winner did not receive a
majority of all the votes cast!!
That's What Happened in the
Last Presidential Election

*

IF YOU WANT A
VOICE IN YOUR GOVERNMENT

SPEAK UP!—REGISTER!—VOTE!

OBITUARY

Aubrey C. Smoot, M. D.

Dr. Aubrey Cannon Smoot died on August 16, 1952, a short time after suffering a heart attack, aged 54. He was the son of the late Rev. Truston C. and Fannie Griffith Smoot, and was born in Felton, Aug. 29, 1898, while his father was serving as pastor of Felton Methodist Church.

Dr. Smoot attended Western Maryland College, attaining his bachelor's degree in 1919, and for a few years thereafter taught in the prep school there. He majored in pharmacy in the Philadelphia College of Pharmacy, and entered the University of Maryland Medical School in 1924, graduating with an MD degree in 1928.

For two years he was associated with Dr. Julius Freidenwold, a stomach specialist in Baltimore. In 1930, he came to Georgetown.

Dr. Smoot was a member of Nanticoke Lodge No. 172, AF & AM, of Federalsburg, Md., and of Hope Chapter No. 7, Royal Arch Masons, of Georgetown. An active member of Wesley Methodist Church, he had been a member of the choir for a number of years. He was a member of Sussex Post No. 8, American Legion, having served for a time in the infantry during World War I.

He was president of the Georgetown Special School District for three years, and had been physician of the Sussex County Prison since 1934.

He was one of the oldest members of the Indian River Yacht Club, and served as commodore for the year 1949-50. He was a former member of the Georgetown Kiwanis Club.

He is survived by his wife, the former Eleanor Virginia Norris, and two sons, Dr. Aubrey C. Smoot, Jr., who is an interne in the Delaware Hospital in Wilmington, and Lt. (jg) William Norris Smoot, aboard the aircraft carrier USS Princeton in the Pacific. He is also survived by two brothers, Dr. Merrill C. Smoot of Hagerstown, Md., and Ralph Smoot of Fordyce, Ark.

Funeral services will not be set pending the possible return of Lieutenant Smoot, but services will be held from his Georgetown residence and interment will be made in Denton, Md., where his parents are buried.

EDITORIALS

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CHALLENGE TO THE PEOPLE OF THE STATE OF DELAWARE

Mental hospitals remain somewhat backward, not because psychiatry did not advance, but because of the lack of public education, the lack of interest of various national and state medical organizations and in general because of national public lethargy. We are cognizant of the fact that the attention of the entire nation has been focused upon the need of adequate preventive and curative mental health services for all of the people.

There are over 600,000 mental cases institutionalized in about 490 public and private mental hospitals. For these hospitals to comply with the approved standards, it will be necessary to employ on a full time basis, at least 9,000 psychiatrists, 3,000 neurologists, 3,000 clinical psychologists, 46,800 graduate nurses, 91,200 trained attendants, 4,800 physio-hydro therapists, 12,600 occupational therapists, 8,400 recreational therapists, 3,000 psychiatric social workers, 2,400 dietitians and 1,500 laboratory technicians, etc.

There are over 5,000,000 adult civilians and veterans who are in need of ambulatory psychiatric service.

The public and private schools also are in need of a great number of psychiatrists to maintain normal mental health among children.

There are many pre-school children who are in need of psychiatric assistance. The modern industry of today cannot maintain a high level of achievement without psychiatric advice.

There are many schools for feebleminded, correctional schools and others requiring psychiatric work on a full time or a part time basis.

A very conservative figure of 20,000 psychiatrists will be needed in the United States if we expect to comply with the demand of the people who are cognizant of the importance of the need of psychiatric treatment, care and advice for curative and preventive work. Lack of trained personnel such as psychiatrists, neurologists, social workers and others is the most important cause of today's existing obsolete conditions in mental hospitals and clinics.

Many large communities are also without adequately trained practicing psychiatrists.

The conditions cannot be remedied within a short period of time, since it will take at least ten years to produce the necessary number of trained personnel. This work must be done on a gradual basis and the public must not be too critical, but should assist the various public and private organizations who are eager to do their utmost for the establishment of many new medical schools with adequate psychiatric facilities, thus giving many more young people an opportunity to study medicine and specialize in psychiatry.

If the public is educated and accepts psychiatry at the same level as it has recognized other branches of medicine, it will be possible to bring up the standards of the mental hospitals to the standards of general hospitals within the next ten to fifteen years.

Recently at the dedication of the new psychiatric unit (B. T. Biggs Building) at the Delaware State Hospital, it was suggested by Dr. M. A. Tarumianz that the University of Delaware consider very seriously the establishment of a medical school. "Delaware has achieved great success in many fields of scientific work. Our young men and women have been encouraged to enter the various departments of our State University. However, they have not had the same opportunity in the field of medicine. A medical school in our state is as vitally needed as any other scientific department of our State University."

We agree with the author's recommendations of the appointment of a committee, composed of members of the medical profession, members of the Board of Trustees, and members of the faculty of the University, by the Governor of the State, to examine the situation.

We believe the people of the State are entitled to know whether there is a definite need of a medical school at our State University and if so, can the State, with the help of some interested citizens, establish such a school, therefore adequate study of the problem is a justifiable immediate state project. We urge the Governor to consider this project favorably.

The A. M. E. F.

A medical education today costs the medical school between $4,000 and $6,000 *more* than the student pays in tuition. In 1910 the tuition fees paid 70 per cent of the cost of the school; today they pay only 25 per cent.

In over half of the universities which have medical schools, the medical school eats up 20-30 per cent of the instructional budget and yet passes out diplomas to only 2-7 per cent of the students.

The physicians of America today more than ever before are appreciative of their freedom and dignity stemming from institutions which themselves are free and dignified. Let's all give to our own Alma Mater through the American Medical Education Foundation. The big point is: every medical school in these United States needs financial help. Let's do it ourselves, instead of looking to some "great white father" in Washington to do it for us and then tell us and our schools forevermore how to educate our coming generations of physicians, and then tell these students what they shall and shall not do after graduating.

EFFECT OF ENCEPHALOPATHY DUE TO CHENOPODIUM POISONING ON THE MENTAL DEVELOPMENT OF A CHILD

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A five year old girl who became critically ill after taking oil of chenopodium for pinworms was referred six months later to the Mental Hygiene Clinic. The reason for referral was given by the physician as oil of chenopodium poisoning with evident reversion to the infant stage. The child appeared to be recovering physically and showed some mental progress. The doctor wished advice concerning psychotherapy and reeducation.

According to Gonzales, Vance and Helpern[1], "Oil of chenopodium, American wormseed, is a volatile oil used as an anthelmintic against hookworms. It has caused death when administered inadvisedly, by marked gastrointestinal irritation, convulsions and depression of the central nervous system. Deafness has complicated cases of chenopodium poisoning."

The parents stated that the girl had been a normal, well-adjusted child before the poisoning. Birth had been normal. She sat at six months, walked at 15 months, and talked before she walked. She was easily toilet-trained at 18 months. She had a good disposition, was easy to control and slept quietly. She had learned the alphabet and was reading a little in one of her older sister's books. She talked well and could sing a number of songs.

At the time of poisoning she was placed in a hospital for several weeks where she had numerous mild convulsions, loss of consciousness and complete paralysis of all motor functions. She developed deafness and partial loss of vision. On her return home she did not recognize her parents, and when she began to walk after several weeks, she bumped into furniture. Control of bowel and bladder was lost. She was unable to feed herself for several months and could not wash or dress herself. At first she talked only in her sleep. She became very active, ran about the house, climbed over the furniture and picked up objects and dropped them. She was too restless to play with anything for long and had to be watched continually. She was also very restless and wakeful in her sleep and was given a sedative for a time. Her disposition changed completely. She became very rough with other children. She cried when she could not have her own way and hit any one who came near her. There was extreme jealousy of her younger sibling.

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* Acting Chief Psychologist, Delaware State Hospital and Mental Hygiene Clinics.

The child first was examined at the Clinic six months after the poisoning, when she was five years and nine months old. At this time she could see and hear again and was being re-trained to toilet habits. She was still unable to bathe or dress herself and this remained partially true throughout the observation period. She was examined on five other occasions. The psychological testing covered approximately a four year span—actually 45 months. In the beginning she was seen at about six month intervals and then annually. Four different psychological examiners participated in the testing. The test scores follow:

Test Scores

Date of Examination: 10-20-43		
Chronological Age: 5 yr. 9 mo.	Mental Age	Quotient
Vineland Social Maturity Scale	1 yr. 9 mo.	31
Cattell Infant Scale	1 yr. 4 mo.	23
Randall's Island Performance	1 yr. 8 mo.	29
Date of Examination: 4-1-49		
Chronological Age: 6 yr. 3 mo.		
Vineland Social Maturity Scale	3 yr. 2 mo.	51
Stanford-Binet (Form M)	1 yr. 10 mo.	29
Randall's Island Performance	2 yr. 5 mo.	39
Date of Examination: 11-2-49		
Chronological Age: 6 yr. 10 mo.		
Stanford-Binet (Form M)	2 yr. 2 mo.	32
Randall's Island Performance	3 yr. 0 mo.	44
Date of Examination: 9-20-50		
Chronological Age: 7 yr. 8 mo.		
Stanford-Binet (Form L)	2 yr. 10 mo.	37
Randall's Island Performance	3 yr. 4 mo.	43
Date of Examination: 8-22-51		
Chronological Age: 8 yr. 8 mo.		
Stanford-Binet (Form M)	3 yr. 4 mo.	38
Randall's Island Performance	4 yr. 3 mo.	49
Date of Examination: 7-30-52		
Chronological Age: 9 yr. 7 mo.		
Stanford-Binet (Form L)	3 yr. 5 mo.	36
Randall's Island Performance	4 yr. 5 mo.	46

EVALUATION OF THE TEST FINDINGS

Language Mastery. At the first examination the child is aware of sound but directions have to be administered with gestures. The mother comments that, "She doesn't seem to understand anything you say." While some residual grouping of words is noted, they are not used in proper context. She is capable of reacting discriminately to her parents but apparently confuses her dog with others, calling them all "Georgie".

At the second examination, she spontaneously vocalizes names of various objects and calls out *Daddy* whenever she hears a car pass by. She combines two or three words and identifies three pictures of the Picture Vocabulary. These performances are of the two year level. Six months later, the mother reports that "She talks now." While she combines words, testing still shows severe retardation in the language area.

Later interviews reveal verbal productions which are brief and poorly articulated. Wherever it is possible to use one word to express a more complex idea she does so. She names objects and pictures but does not describe experiences in connected prose. Stereotypy prevails in her definitions of words.

Reality Perceptions or Adaptiveness. From the beginning a tendency toward shyness and passivity on approaching strangers is noticed but after she has gotten somewhat used to them and praised for performances, she appears at ease. At later sessions she seems outgoing. She smiles occasionally and may make a request such as, "Let me do it!", but does not respond to personal questions.

At the first interview, she manipulates objects at best like a two year old and shows little evidence of a self-critical faculty or a consciousness of failure. Performances are highly stereotyped in the beginning but less stereotypy is observed as she grows older. Though interested and curious, she rarely exhausts the opportunities for constructive play that are offered her. She likes concrete objects and at the last examination plays with them forcefully and adequately at the four year level. Planning of space and directional relations are defective for age but relatively good for capacity.

Motivation. From the first, her attention span is observed to be short-lived and frustration tolerance low. Sometimes she appears

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resistive to new situations and non-conformist. Many activities are repetitive and stereotyped and it is difficult to motivate her to change the original approach. There is a repressed manner of behaving but she still seems very distractible and unable to concentrate. The narrowness and unreliability of her attention focus are responsible for much of her retardation.

Motor Control. While some improvement is noted in fine muscular coordinations over the testing period, she remains relatively awkward in manipulation of objects.

Capacity or Intelligence Level. She has gained some ground in her over-all functioning level as age has progressed, but in none of the examinations has she rated higher than a mental defective of the moron level. Today at the age of 9 yr. 7 mo., she acts at best like a four year old. Her average ratings are not high enough at this time to justify school attendance.

Discussion and Summary

1. Six months after the administration of oil of chenopodium, this child dropped from a mental age rating of 5 yr. 9 mo. (presumably, since she is reported to have been a normally bright child), to as low as a mental age of 1 yr. 4 mo. Without question she functioned even lower before reaching the Clinic.

2. Mild improvement was noted only at the first three examinations. No appreciable change was seen in the last three years. Whatever change in test scores occurs is attributable to scaling or chance errors.

3. She has not made the rate of gain expected for her chronological age and relatively has remained at the mental defective level.

4. The improvement in reality and motor functions is consistently greater than in the language and volitional. The basic personality structure before poisoning is not known so that we can only conjecture about whether the impairment due to the drug has been greatest in the originally most poorly developed traits of the personality or whether brain damage such as this affects the verbal and motivational areas most.

5. The prognosis for future mental growth is poor. She will probably continue to make further gains at the present slow rate for some time and will have to be considered mentally defective. By the time she is 12 years old, she may be sufficiently developed mentally to profit from first grade training, but her progress at school will be very slow. If her learning continues at the rate of the last three years, her limits of maximum achievement will be second grade. With her severe retardation in verbal and motivational assets in relation to capacity, she may not even reach this predicted maximum. There is also the possibility that a very gradual chronic decline in mental efficiency will occur despite the improvement observed immediately following the trauma.

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GROUP PSYCHOTHERAPY WITH AN OBSESSIVE-COMPULSIVE

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Previous papers by the author reviewed the literature of group psychotherapy (1,3), the technique and explanatory concepts of short term group psychotherapy (2), an analytically oriented approach to group psychotherapy (4), a series of group psychotherapy sessions with explanatory comments relating to group management and group process (5), criteria for selecting patients for group psychotherapy (6), aims, goals and results of short-term group psychotherapy (7), and significant clinical factors as they relate to the use of group psychotherapy (8).

The chief purpose of the present paper is to present a telescopic picture of the emotional vicissitudes of one patient during the course of a series of group psycotherapy sessions. The general plan is to give brief identifying data, present symptoms and reasons for referral to group; brief glimpses of the course of treatment and techniques of management; and, finally, a discussion of pertinent historical and current material.

The Patient

This patient is a white, married, 29-year-old male of stocky build, about 5' 4" in height. He presents a neat appearance with a pleasant but vigorous attitude.

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His primary complaint is his fear that he will "blow his top and go mental." When he is closed in, such as in church or in a crowd, he feels particularly nervous and he is afraid of hurting someone. He also states that he is disturbed by excessive perspiration, tremor, heart palpitation, and stomach distress.

He was referred to group after six months' individual psychotherapy for the purpose of witnessing other people with like difficulties and with the hope that, in the group setting, he would have a more realistic understanding of his egocentricity.

Course of Group Treatment

This patient graphically describes his feelings at coming for treatment: "Yah, that's an important thing. I wouldn't like anyone to see me entering this building. Today, I rushed down the street hoping that I wouldn't see anyone from my office coming the other way. So what happened, I bump into a man coming up 'D' Street (where the group psychotherapy meetings were held)—the s-o-b recognized me. He wouldn't go up 'C' Street, so I had to walk along. Yah, he was going straight up 'D' Street, and he starts a bull session. The time was getting closer to the hour that this group was going to meet. I said, 'I'll see you'—and he keeps waiting. I tell him, 'I don't want to keep you waiting. I'll see you.' He stands there. Finally, I got rid of him. I screw up 'C' Street, go down an alley and come back to 'D' Street. Some guys will come and talk to you and say, 'Gee, you ought to see those nuts that go to 'D' Street—what a bunch of nuts.' They think everybody who comes for treatment is a guy running around with a knife in his hand, or a guy that's thrown into a straight jacket, or he's a perfect idiot."

After the patients of the group had established a favorable relationship with the group psychotherapist and with each other (10 sessions), discussion turned to fear of insanity. The entire group spoke about their respective degrees of fear of going insane. Our patient stated that his first fear of insanity occurred when he was hospitalized for an appendectomy. It took place at a time when his wife had telephoned one evening to say she wanted to visit him. He waited for her all evening, despite the fact that he had told her emphatically not to come. He was assailed by panicky feelings that he was going insane. During the recital of this episode, the patient used the word f—— many times. Following this outbreak, he stated that his next thought was about the heavens. The group psychotherapist suggested that when the patient feels threatened he becomes aggressive. And now perhaps he was seeking forgiveness from God for his aggressive thoughts.

At a later session, the patient opened the hour by stating that he was rather nervous that day. The previous day he had gone to the barber shop for a haircut. There was a judge sitting on one of the chairs. The patient felt a sudden impulse of hostility toward him "for no reason at all." Patient stated, in fact, that he had been quite friendly with this judge, although he referred to him as "that senile old s-o-b." This in turn, reminded him of an episode in service. An officer walked in and sat on the barber's chair before the patient whose turn was next. This infuriated the patient, and instigated a discussion about officers. Officers demonstrated their superiority over him, when actually they had no right. Inasmuch as the catharsis of hostility towards officers portrayed the group's reaction towards superior people and father figures, the group psychotherapist suggested the possibility that perhaps they were aggressive towards their fathers and frightened as well. As the session came to a close, our patient commented that he should know enough to be able to act like a grown person e.g. not to be frightened and aggressive.

The theme of aggression towards superior figures continued throughout the next several sessions. Our patient denied that his feelings during the week have anything to do with aggressive feelings toward authority figures. Interspersed throughout his denials is the word f——. Now he associates to the idea that he is going to attend a retreat for meditation and prayer. However, the patient this time quickly perceives that he has neutralized his aggressive feelings toward 'superior' figures by "asking God for forgiveness." His eyes begin to fill up, but he does not cry. The group psychotherapist asks him how he feels. He states he feels sad and wants to cry. His next remark is that he wishes he could relax like the group psychotherapist. He envies the group psychotherapist. Then he thinks of his father. He recalls his childhood when his father would be drunk and abusive, saying to the patient, "Get to hell out of here. Get out of the house." Whereupon the patient would walk out in the street and cry. The group psychotherapist asked the patient how he felt towards his father at such times. The patient blocked. He protested that he loved his father, but later admitted that he hated him. Then he added, "I used to wish that I could be six feet four, pick up my father by the scruff of his neck (he gestures) and say, "Now, look here, you!!" The patient's statement brought responses from the other members of the group on the theme of desiring to be big, strong, and powerful. The patient mentioned that he seemed to be identified with his father in that he noticed that he was belligerent toward his son. He reprimanded his son severely and then felt guilty afterwards. He mused, "When my son is twenty will he say things about me like I do about my father?"

At a subsequent session, the patient stated that after leaving the previous week, the group had gone in for coffee at a nearby drugstore. The patient noticed a man on the stool next to him had "cancer of the nose." He described the man's nose as having been completely obliterated. The flesh had been eaten through on both sides of the nose. This sight terrified the patient. The group psychotherapist asked what these mutilations meant to him. He had no associations. The group psychotherapist then substituted the word "defect" for "mutilation." The patient then stated, "That rings the cash register; I can see the sign coming up." He felt that "defect" reminded him of a defective brain or insanity. He began to talk about his inferiority feelings, and the fear of harm. He felt he was inferior because he was small physically. The group psychotherapist asked what else. The patient stated his brain was small. He was intellectually inferior. When asked what else, the patient remarked, "I can't quite think what else, yet I have the feeling that whatever it is, it must be sexual." He then added, "small dick."

Now the patient talked about punishment from God and his fear of God. He even feels guilty talking to the group. He should be talking to a priest—a man of God. These thoughts which he expresses are sinful. He recalled an incident in his childhood when his father refused to cooperate with him in his desire to attend a seminary to become a priest. "I told father if he didn't let me go, I would jump out the window."

The patient then talked about the fear of fathers. He told the group again how nasty he was to his own son and related his awareness that in doing so he will produce in his son the same neurosis he has now.

At the final hour, the theme of love is discussed. It developed that the patient's shouting at his children, his punitive attitude toward them is his defense against actual manifestations and demonstrations of love for them. He tells of fantasies, of coming home at night, stopping the car as he is about to enter the driveway, seeing his children run up to him. He hugs them all in turn, taking them into the car and driving into the garage. "But what do I do instead. As soon as I see them I begin to yell at them." He tells of witnessing the promotion of his daughter. He was nervous and tense. As he stood and watched the children, he felt tears welling up in his eyes, an emotion which he struggled to control. He defends himself against this demonstration lest he feel like a "sissy" or like a very dependent person.

The balance of the session was devoted to a self-evaluation as the result of the group experience. Our patient took the initiative. He spoke about "coming to realize that my complaints are not individual, but that they are shared by others. People have such thoughts. I am beginning to feel there is much love in the world and that I am not the rejected person I at times feel. I am learning to enjoy some measure of independence. It gives me the strength and security that I feel I must have been searching for. I feel when I enter a room, join a group, that

I am welcome. I feel less often that it is always necessary for me to make a special effort to impress someone else, that I am their equal and not to be ignored. I have a stronger feeling that I am overcoming feelings of insecurity, inferiority, and rejection. This is helping me to restore my self-confidence and success in overcoming the phobia of mental instability that has obsessed me."

Discussion

This patient grew up, unquestionably, in a highly traumatic setting. There is repressed hostility toward his father. He has overcompensated tremendously through the years for feelings of inferiority and denial. With an increase of anxiety and insecurity, his aggression leaped beyond tactful bounds and obsessive thoughts represent an escape from an unconsciously dangerous world.

His anxiety is attributable to the intensity of his sadistic impulses, which he feels as a threat to his ego. Such feelings are associated with his obsession of insanity and come on whenever he feels inferior. His feelings of incapacity would lead him to both love and hate those whom he feels to be better than himself. Some attempt was made to correlate his feelings of inadequacy with unacceptable emotional impulses from early years with current events. The greatest effort was made in the direction of increasing his reality contact: an attempt was made to have him become aware that so much of the anxiety that he attributed to present day situations, really is ascribable to childhood events and relationships.

The patient tends to identify himself with unfortunates in many ways. He tends to identify himself with those who are mentally ill. He becomes quite upset. His fear of insanity is a defense against his need to be insane to carry out certain desires in an uninhibited, irresponsible way. Insanity is an escape by which he might express his aggressiveness without fear of punishment and a way of dropping his responsibilities without guilt. Hence we witness the battle between his instinctual drives, his deep feelings of inferiority, and his punishing, overly strong superego.

He is querulous in the group psychotherapy situation. His balance neurosis comes into focus and with it his needs to secure as much as possible from others, while giving as little as possible in return (oral narcissistic needs). Since he has never allowed himself to be dependent on anyone, he is insecure in psychotherapeutic relationships. In the group, there is an obvious tendency on his part to reach for an omnipotent position as a measure of protection. He attempts to maintain omnipotence by trying to dominate the group.

His aggressive attitudes are directed outward, raping others, or against himself, raping himself through his superego. His feelings of being inadequate are tied up with his problem of identification: his fear of being exploited, taken advantage of, used as a sucker. It is the problem of being a raping male versus being an outraged woman. He reacts either with feelings of guilt for his aggressiveness or alternately with feelings of being exploited and badly treated by a hostile world. He also has a third alternative: the escape from both possibilities by being the dependent child. In which case, the patient thinks in terms of two extremes: either the big, powerful man who needs no one, or else to be the little baby: instead of accepting the presence of both elements, e.g. "In every grown man there is the little child who wants to play." He has always set up almost impossible standards of success, encouraging failure with a subsequent castigation of himself.

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PSYCHOTHERAPEUTIC GAINS WITH TWO CONTRASTING CASES IN A CHILDREN'S INSTITUTION

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The purpose of this paper is to illustrate the potential value of psychotherapy with emotionally disturbed children in an institutional setting. Also, it is our endeavor to present evidence contrary to the notion that the technique of psychotherapy is limited in applicability to a few select cases. While undoubtedly there do exist so-called "untreatble" cases, it appears that many of these severely disturbed cases can be treated successfully in an institution where various controls, which are not available in the community, are possible. The two cases to be presented here represent severe disturbances of different types. Psychotherapy has been successful with both. Although the paper is limited to the presentation of these two cases, many others representing different variations of personality disturbances who have benefited from psychotherapy within the institutional setting could be similarly presented. These cases are offered as suggestive of what can be accomplished through psychotherapy when adequate personnel and time are available.

No claim is made in this paper that "complete adjustment" has been attained by the two cases reported. It is believed, though, that these cases represent successful psychotherapeutic gain. By this is meant that the individual's "adjustive capacity" has increased. It is not the intention of the writer to imply that the patient has made an adjustment which will sustain against any trauma throughout his life. Such an implication is absurd. Nevertheless, these patients have manifested a degree of improvement in their capacity to make appropriate adjustive responses which is sufficient to warrant their return to a home environment. This improvement should continue after they leave the Center if they are placed in a reasonably normal family.

Although it is realized that ecleticism is a psychotherapeutic orientation which, interestingly, is opposed by some children's workers, it is readily admitted to by the writer. It is his personal opinion that it is the most valuable orientation at our present stage of knowledge of personality. Particular dependence, however, has been placed upon the theoretical and practical offerings of personalistic psychology and the various branches of psychoanalysis.

While the general orientation of the psychotherapy discussed here is ecletic, the dominating theme is psychodynamic. By this we imply a basic concern with underlying casual relationships in behavioral phenomena. When the behavior is abnormal the therapist assists the disturbed individual to become aware of the casual connections between hidden disturbed areas of his personality and overt maladjusted behavior. The therapist also provides a wholesome relationship for the disturbed child. At times he actively provides emotional support if the child is threatened by actual environmental threat. The writer has found that working toward a change in attitudes in the child, particularly when working with the delinquent or pre-delinquent child, is all important. With most cases basic personality structure is usually modified little if at all. Efficiency in utilizing potential cognitive abilities may improve, also, as areas of affective and attitudinal disturbance become reorganized.

Several criteria which are of value in assessing the progress of psychotherapy are listed here. These items will not be specifically referred to again in this paper. They are, though, essential for any objective evaluation of the status of a case, and have been utilized in evaluating the children presented in this paper. The following criteria are presented: (1) Subjective opinion of those who are generally acquainted with the patient but who may have infrequent direct contacts with him. It may include the psychiatrist who is supervising the therapist. It may also encompass teachers, nurses, and house counselors (other than those who have the child under their direct supervision). (2) The general adjustment of the child as observed directly by his immediate supervisors in school and cottage situations. The teacher can contribute greatly in the way of evaluating the patient's progress in school work, including his general behavior as well as his state of mental efficiency. The cottage counselor is in a unique position to observe the child in what most simulates a home situation. As well as the child's general behavior, specific problems in the areas of emotional responsiveness, aggression, eating, and voiding can be readily observed. (3) The subjective estimate of the psychotherapist who is treating the child. This opinion should not, of course, be biased in favor of an unjustified impression of improvement in the child under his guidance. It is usually, however, the trained therapist who, because of his intimate understanding of the case, is in the best position to decide whether improvement is real and what the chances are of its being sustained over a period of time.

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As far as the evaluation of psychotherapy is concerned, a logical question is to what extent the improvement in a case is due to other factors, such as change of environment and physical maturation. Undoubtedly, the change from a pathologic to a healthy environment will be sufficient to bring about improvement in some not too seriously disturbed children. It has been the writer's experience that children who are as disturbed as the two boys reported on in this paper require more specific help than that provided by environmental change. Observation of similar cases in this and other institutions has revealed that without specific psychotherapy these cases show far from optional improvement. The same situation holds true for physical maturation. Severe disturbances are usually not just "outgrown." Again, it has been demonstrated repeatedly that with severely maladjusted children their disturbance will persist in spite of physical development unless these specific remedial measures are instituted.

The two cases to be presented in summary form were selected for presentation because of the contrasts in the form of personality disturbances and of the psychotherapeutic progress that has been achieved with each of these extremely disturbed cases.

Case A

Danny at one time was a good example of the "acting out" delinquent boy. He has been at the Center for nearly three years. His delinquencies are non-existent now, and he is generally considered a likeable boy who has made definite progress. Danny was referred to the Center in 1949 following various delinquencies, including stealing. An alternative plan had previoulsy been considered. This was that Danny be given a trial in a foster home. If this failed he was to be sent to the Boys' Industrial School. It ultimately was decided that he come to the Governor Bacon Health Center. Here he would receive the advantages of environmental protection and possibly individual psychotherapy.

The psychiatric staff presentation of the case was as follows: "Formulation: This is a ten year old white boy, who is the product of a disorganized home in which he has received little emotional or material support from either his father or mother . . . he has reacted to his difficulties with hostility towards a world in which he finds more enemies than friends. He is "convinced that his mother has rejected him and is not hesitant in verbalizing this to the world. There is evidence also of a severe speech defect, together with serious educational disabilities. These factors put together indicate a serious degree of maladjustment in later life. His short attention span, and lack of motivation will probably cause difficulty and keep him from getting along in school and otherwise.

Diagnosis: Primary Behavior Disorder, Conduct Disturbance, Personality Disturbance. Social Problem.

Prognosis: Extremely poor, and is dependent upon the degree of conditioning he can receive and his willingness to conform with social mores."

Several psychological examinations have been administered to Danny. All have indicated borderline global intelligence at best. Some evidence for low average potential intelligence was available. Variability in the intelligence scale subtest clusters indicated severe personality disturbance.* Physical examination was negative.

Danny's school and cottage adjustment here at the Center was disturbed for some time after admission. In school he was disobedient. He ran away frequently, and made essentially no improvement at first. While it is appreciated that his intelligence level was not capable of high achievement in school subjects, his disturbed behavior in the classroom to which he had been assigned here at the Center was essentially the result of his personality disturbance rather than his intellectual level. The class assignments and his peers in the room were on a level where he was obviously not intellectually threatened. In his cottage he adjusted poorly. He frequently displayed temper flareups and frequently led his cottage mates in delinquent acts. He also suffered from nocturnal enuresis and night fears. His poor motor coordination was quite noticeable.

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* For material pertaining to the dynamic relationship between intelligence and personality structure see Jastak, Joseph: A Plan for the Objective Measurement of Character, J. Clin. Psychol., pp. 170-177, 1948.

Immediately following a series of acting out episodes in his cottage and school Danny was assigned to the writer for emergency individual psychotherapy.* After a few psychotherapy sessions it was decided that he continuine in ** individual therapy on a regular basis. The first aim was to establish a sound relationship with Danny. This relationship would serve as a psychological "anchor" in stabilizing his aggressive, acting out behavior. This relationship was established, and Danny's behavior gradually became more socially acceptable. At first he was over-solicitous to the therapist. He kept his hostile feelings supressed while with him. In other situations inadequately controlled aggression still poured forth. This ceased eventually. He began to bring his problems into therapy. Frequently he would become quite upset over the slightest provocation while in the therapist's office. During these temper outbursts he would upset the office and "test out" the therapist's patience to the limit. By this time the initial relationship had become sufficiently strong. Consequently the therapist was able to work through with Danny some of the reality problems involved in such behavior. Then followed a period of "why" did he behave the way he did. With increasing understanding of cause and effect relationships in his behavior, as well as increasing awareness of the satisfaction of socially conforming behavior, he gained increasing control over his outbursts of hostility. The fact that the therapist could accept him in his rebellious moods, and still try to understand and help him control himself, was of primary importance with Danny—as it is with all cases of this type.

Danny has been seen in approximately 240 hours of psychotherapy. At the present time he is a good candidate for an adequate foster home placement. He has gained a reputation of honesty and amiability with his cottage counselors. His temper is under control. He does more than cooperate. He actually assumes leadership in constructive work and play about his cottage. For several months Danny has successfully participated in Boy Scout activities and is now a full fledged and highly thought of member of this organization. He has sublimated much of his aggressive energy into sports, building projects, and into his desire to be a soldier some day. In school his motivation and cooperativeness are appreciated by his teachers. Scholastic achievement is limited by his intelligence level. However, his ability in manual work is good evidence of potentially higher intelligence, at least in the non-academic area. Danny has received speech therapy during the past year. He has profited from it and now speaks relatively well. Nocturnal enuresis still persists to some extent. It is believed that this symptom will gradually diminish until it disappears entirely. His motor coordination has improved noticeably although he still shows occasional signs of poor coordination when excited or anxious. One can speculate that improvement in voluntary muscular control and diminishment of enuresis may proceed together.

At the present time the outlook for Danny seems far better than it did two years ago. The therapist is not deluded into thinking that all will necessarily go well with Danny henceforth. He is not an ideally adjusted child. However, he has improved significantly. Improvement is particularly noted in his attitudes, his frustration tolerance, and his ability to substitute for impulsive outbursts, realistic, adjustive action. He is not a suitable candidate for a more intensive type of psychotherapy because of his intelligence level. He needs at this point an adequate home environment. If he can be placed in a home which will provide an average amount of control and affective support, much will be accomplished to insure his continued successful adjustment. His school placement in the community should be on a level commensurate with his ability level. Although his general intellectual level remains the same, his effective use of his intelligence, i.e., his personality integration, has improved. This should be of value to him in his school studies—up to the limits of his intelligence level.

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* All psychotherapy is under the direction and supervision of the Psychiatric Staff.

** Danny had previously been in group therapy for a short time.

Case B

Larry presents a contrasting picture to Danny. When Larry came to the Center he was withdrawn almost to the point of incommunicability. He demonstrated no delinquent tendencies. He was shy, fearful and pathetically inadequate.

In 1950 the Diagnostic Staff formulated the case as follows:

"Formulation: This is an eight year old white boy who comes from a disturbed family; the parents are divorced. . . The mother is an unstable, neurotic, inadequate woman, who apparently has never been a strong figure in the lives of her three children. The father has been out of the family for a full year now and is unreplaced by any other male figure. Larry is referred to the Center because of his gross retardation in all school subjects, and inability to make anything like an adequate social adjustment to his school colleagues or community friends. He is brought here under the premise that his troubles stem from a physical disability, although this offered illusion is quickly shattered, and the mother can grudgingly acknowledge that her marital disruptions and own personal inadequacies have a share in the child's difficulty.

Within the institution the initial impression of this boy is rather a pathetic one of a forlorn, inexpressive, inadequate boy who is overwhelmed by fears and anxieties, constricted emotionally and physically, almost to the point of immobility. He is withdrawn, taciturn, unsocial, distractible, anxious, unproductive. He seeks solitary play and has to be forced into group activities . . . Psychologically, he is of average intelligence, manifesting dysfunction in the areas of language facility, and motivation. He is severely withdrawn and constricted . . .

Diagnosis: Primary Behavior Disorder, Personality Disturbance, with neurotic trends and Conduct Disturbance.*

Prognosis: Guardedly unfavorable."

As well as the symptoms already described, Larry manifested encopresis, and both nocturnal and diurnal enuresis.

Psychotherapeutic movement with Larry was very slow. He lacked initiative, was nonverbal, and showed no spantaneity in motor activities. Psychotherapy in process was decidedly unspectacular. It was many months before an adequate therapeutic relationship was established. Psychodynamically, it was obvious that Larry's psychic energy was tied up in his many symptoms. Energies were directed inward, so to speak, rather than being expressed in social participation with his peers or in learning situations in school. Fundamentally, it appears that Larry's energies were bottled up because of a psychological mixture of fear of and hatred toward people. His withdrawal tendencies resulted from his fearfulness. His fearfulness had stemmed from a nearly complete suppression of self-assertive and aggressive needs. Being unable to gain libidinous satisfactions from external reality contacts he found them in his autistic symptoms. He was unable to mobilize sufficient "free" energy to attack his school subjects vigorously—in a sense, learning is an aggressive act. Larry's aggressive energy had been internalized. Self expression consequently had become limited.

In psychotherapy (Larry has had approximately 180 hours of individual psychotherapy) one of the aims was to assist Larry in gaining confidence in himself. The writer has little trust in the permanent success of direct methods of increasing confidence by persuasion and suggestion with cases of this sort. It was only as the relationship with the therapist increased, and as Larry became able to express himself, that his confidence began to increase. Likewise his fear of people (which was tied in with his unexpressed hostile feelings toward them) lessened as he became better able to verbalize and express his feelings.

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* One year later in reviewing the case the Psychiatric Staff raised the question that perhaps the original disturbance had been more of a schizophrenic rather than a neurotic process. However, apparently due to progress in therapy, the diagnosis remained the same except that "conduct disturbance" was dropped inasmuch as no evidence of conduct disturbance had been demonstrated.

The therapist also worked with Larry on establishing a cause and effect relationship between his symptoms and the dynamic forces lying behind them. It became more obvious to Larry and therapist alike that Larry's suppression of his self assertive needs was instrumental in suppressing his development in many other areas of self-expression, e.g., socializing and learning in school. It should be emphasized that, although Larry became more aggressive, he was not directly encouraged in this direction. This would have been as valueless as using a direct approach to develop confidence. Furthermore, with cases of this type a compensatory plunge into antisocial aggression has to be carefully guarded against. As Larry has worked through many of his fellings of parental rejection and hostility toward his parents, his symptoms have lessened.

At the present time Larry shows considerable improvement in spontaneity. He has "come out of his shell." He is more self-assertive when the reality situation demands it. He can discuss his problems more adequately. Although he is reserved with adults whom he does not know well, he shows the ability to warm up to them once he becomes acquainted. In his cottage Larry has become the leader of his peers. He handles himself well physically but is not a bully. He is respected and liked by his cottage mates. In school his teacher reports remarkable improvement. She describes him as "a real boy now." He still needs some more specific help in reading, but with his improved mental efficiency this should not create too great a problem. In sports he has become a capable player. Larry's encopresis appears to have ceased. He still wets himself, but he is gradually improving in this area.

Larry's future outlook now appears to be favorable. He can profit by more intensive psychotherapy, although if his environment is adequate he can get along without it. In any case, he no longer needs to receive psychotherapy in an institutional setting. His parents, who are reuniting, feel that he is so normal that they are demanding that he return home.

Discussion

If reasonable success in psychotherapy has been demonstrated with the two severely disturbed cases presented in this paper, prospects for many disturbed children appear brighter. For those children suffering from milder degrees or types of disturbance the outlook should be brightest of all. But we need not restrict our psychotherapeutic efforts to the moderately disturbed children. With a greater expenditure of energy many of our more seriously disturbed children, too, can be successfully treated.

If one raises the question of permanecy of psychotherapeutic gain it leads us right to the social problem of how to improve home and family environments to the point that a returning child who has worked through his personality disturbances will not become disturbed again. This question cannot be answered easily. We do know it is possible to help children while they are in the institution in spite of corrupt or disorganized families. We also know that a child's frustration threshold may be significantly increased. This still implies psychological limits beyond which he cannot tolerate. Likewise, we expect individual differences in ability to tolerate frustration. From the time that the child reaches his optimal level in this respect we can from then on expect diminishing returns from psychotherapeutic effort. The problem then becomes one of environmental manipulation.

In closing this paper on psychotherapy within an institutional setting a word should be said about "the setting." Ideally, psychotherapy is the central process in a therapeutic milieu. Nevertheless, a total approach by the entire staff is essential for the improvement of the child. Teachers and house counselors, as well as the psychiatric and medical staff, have all contributed to the success that has been achieved with our cases here. Insofar as we are concerned with the type of personnel capable of working with disturbed children, it appears that the more maladjusted the patients, the greater the need for mature staff members with high integrative capacity. When the combined efforts of the entire staff are devoted to helping a child, the role of individual psychotherapy is a catalytic one. Psychotherapy opens the door for other workers to develop relationships and to encourage the child to engage in other therapeutic activities. The two children discussed in this paper were able to profit most from the helpful adults in the institution after sustained psychotherapy had made it possible for them to do so.

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THE ROLE OF THE PSYCHIATRIC SOCIAL WORKER IN MENTAL HEALTH EDUCATION

Hazel Browne Madry; M.A., M.S.W.,*
Delaware City, Del.

With the improvement in physical health which is the result of preventive medicine, emotional health becomes the primary health problem. Those engaged in any of the professional disciplines concerned with the diagnosis and treatment of the emotionally disturbed and mentally ill feel a real responsibility to participate both directly and indirectly in a program of mental health education. Services of mental health clinics and residential psychiatric treatment centers such as Governor Bacon Health Center are not always understood. Psychiatric social workers by training and tradition are peculiarly concerned with the adjustment of the individual and his ability to enjoy relations with others. While the American Psychiatric Association recommends a seven point program of mental health education, psychiatric social workers are participating in mental health education in three areas; and, in teamwork with the psychiatrists. They are concerned with (1) interpretation of information and function (2) leadership and cooperation in programs already set-up and (3) research.

Interpretation

Interpretation occurs at intake as a major function of the psychiatric social worker in a mental health clinic or psychiatric hospital. This general practice is approved for the psychiatric social worker has a particular advantage provided through training which develops the interviewing technique. To this assigned function, the psychiatric social worker through her warmth and ease of approach, demonstrates at the first meeting the attitude of the professional staff of the clinic or psychiatric hospital. She is familiar with the resources of the community and is sensitive to the problems of a troubled person. The skill with which interpretation is made at the time of the patient's first visit may significantly influence the therapy.

The Committe on Psychiatric Social Work of the American Psychiatric Association believes that as a staff member of a psychiatric hospital, the psychiatric social worker has important responsibilities of interpretation which is outlined as follows:

a. To assist in the interpretation of the hospital's facilities and program to the patient and his family;

b. Assistance to the family with problems arising from the patient's admission to the hospital, amelioration of the family anxieties in relation to the threat of having a mentally ill relative; interpretation to the family of the hospital's treatment procedures;

c. Formulation of plans, with the assistance of other community social agencies, which might make admission less urgent or occasionally prevent unnecessary or ill-advised admissions;

d. Establishing a relationship with the family which will encourage them to maintain a positive, non-rejecting attitude throughout the period of care, ultimately helping them to receive the returning patient with understanding and acceptance;

e. Helping the patient to understand that the psychiatric social worker serves as a link between him, his family and the community. Thus the social worker will assist in maintaining and preserving the patient's family and community ties.

In the same setting the psychiatric social worker in Family Care, which is the placement of patients with families other than their own for care and treatment, has the major responsibility for interpretation. In addition to finding a suitable home, she must be able to interpret the patient and his needs to the foster family. The American Psychiatric Association recommends that adequate time be allotted to the psychiatric social worker for community interpretation. The duties and responsibilities of the psychiatric social worker in the hospital and mental hygiene clinic place her in a very advantageous position to develop constructive attitudes toward the recognition and treatment of personality disturbances in children and of mental illness and to secure the participation of lay people in the development of favorable attitudes towards clinic and psychiatric hospital care. With psychiatric patients continually returning to the community, there is real and urgent need for an informed public to develop an awareness and acceptance of these patient's problems. There is no other professional group qualified by training and experience to assume this responsibility.

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* Psychiatric Social Worker, Gov. Bacon Health Center.

Again in the education and training program within the psychiatric hospital for other non-social work personnel, it is the specific responsibility of the social worker to interpret the content of her own professional activities.

On a broader basis, the psychiatric social worker also participates in interpretation through work in councils of social agncies and other civic and professional organizations. The Committee on Psychiatric Social Work of the American Association states that:

> because of the training of the psychiatric social worker in community organization, as well as in casework, she understands the environmental variations and is skillful in adapting her professional efforts to different conditions within and outside the clinic (and the hospital). She is the member of the (clinic or hospital)) staff who works most frequently with sources of referral and inquiry and is therefore the proper representative to intepret the clinic (and hospital) services and procedures to a potential patient, his family, and referring health or welfare agencies at the point of intake. In fact, even before actual referral, she may interpret the clinic and hospital's function and help an individual or agency to determine whether its services are appropriate to the problem, or she may point out more suitable resources in the community. Since the interpretation of community services in relation one to another is an integral part of social work practice, the matter of interpretation is usually assigned to the psychiatric social worker.

LEADERSHIP AND PARTICIPATION IN GOING ORGANIZATIONS

Psychiatric social workers are actively engaged as leaders in mental health education programs upon the requests of groups within the community. The psychiatric social worker at Governor Bacon Health Center is frequently called upon to lead discussions for parent-teacher and child-study groups, for teenagers, service clubs, women's clubs and church groups. The public health nurses, student nurses and teachers of different education levels and specialities have also requested leadership in their programs. We do not attempt a cold discussion of psychiatric principles but rather use the material which is a part of the everyday life. The actual teaching of mental hygiene concepts and knowledge of their application remains the function of the professionally trained personnel—the psychiatrists.

In the position of group leader, the role of the psychiatric social worker is essentially the same as that of a skillful caseworker. She must be attentive to the needs of the group as she is to the patient. She guides, supplements and integrates the discussion around the group's own interest. The problem in these discussions is to inspire the listeners so that they will practice what they have learned. The illustrations should be practical with a focus on those problems in which improvement is possible rather than on the pathology or destructive outcome where principles and concepts of mental health are ignored. The simple statement is often made to a parent's group that so often the basic needs of the child for attention and approval can be so easily overlooked by well-meaning parents. This is followed by the suggestion that parents arrange to give each child some time alone even if this be limited to a few minutes each day. It has been gratifying to have parents who follow this suggestion report at meetings that they have enjoyed a pleasanter week and believe they learned something new and beneficial in each period spent with the child. My feeling is that we need a genuinely positive approach; "people want to be reassured rather than threatened." Through the discussion of mental health principles with a group, individuals learn that there are ways out of inter-personal difficulties that do not require one to be made over into a radically different personality. Everywhere there is a spirit of earnest inquiry and attitudes change almost visibly. Having confidence in Mr. and Mrs. Everyday Parent, I find that for the most part, they do their job well. It is our function to enable them to increase their skill in the art of parenthood, thereby experiencing the thrill of their creative effort and pleasure in their children. My favorite discussion with parents is centered around the subject *Enjoy Your Children.*

We find at Governor Bacon Health Center that the presentation of a staff conference to professional people in related fields demonstrates the team approach to diagnosis and planned therapy. The observations, information, the physical examination, psychological studies and psychiatric examination are thoroughly studied so that we secure an understanding of the origin of the problem and its development which lead to the parent's request that the child be removed from the home temporarily. These staff conferences and discussions in which the psychiatric social worker participates emphasizes the integration of all services at the Center. The goal of treatment is determined by this kind of teamwork.

The following suggestions may be used as guides in setting up groups for discussion. First, there should be a basis of common interest; for example young parents inquiring about the emotional development of preschool children. A second consideration should be directed towards keeping the groups small so that a protective in-group feeling will stimulate a willingness and freedom of discussion. Small groups create a favorable emotional climate which permits the discussion of new ideas and lends encouragement to their expression, thereby making it possible to integrate new ideas with what they already know and do.

There is a variety of media to be used in the program of mental health education, including group discussion and panels. These are effective with one or more professional people and parents, or teachers and members of the staff of juvenile courts, with children frequently participating. Some clinics distribute pamphlets but we find that this is not too successful unless provided for a specific problem or a subject and even then, arrangements should be made for discussion.

Films play an important part in mental education for one picture is worth a thousand words. At Governor Bacon Health Center we use films for staff development, to present the dynamics of health health treatment to selected groups, and to facilitate discussion. The films *Human Growth* and *Human Reproduction* are excellent for sex education. *Roots of Happiness,* recently released, is an excellent presentation of the inter-relations of parents and children in a democratic family. Other films frequently used are: *Feeling of Rejection, Feeling of Hostility,* and *Preface to Life.* The Governor Bacon Health Center has been fortunate in that the Delaware Federation of Women's Clubs for two years provided funds which were used to rent films. Few mental hygiene clinics or mental hospitals have been so fortunate. The Delaware State Hospital and the Delaware State Mental Hygiene Society also have film libraries to be used in mental health education. Each of these will also provide a discussant upon request.

Another use of films at Governor Bacon Health Center is made possible through the Parent's Association, an organization of parents whose crippled children and children with a diagnosis of seizure are in residence. The films which they provide are used in making pictures of their children as they receive the different therapies. Hollywood makes no more interesting pictures than these. In addition to making it possible for the children and parents to see progress, these films have teaching and research features.

Radio is a medium which reaches the greatest number but is not considered the best medium for professional influence.

Radio is one method of public mental health education which should consist of a series of talks. We have participated in one television program and many activities of the children at Governor Bacon Health Center have been televised. This method of education needs to be further developed.

Research

We believe that psychiatric social work must not only be concerned with research in its own field but should participate in general clinic and psychiatric hospital research. To date, this has been largely confined to administrative and financial studies; descriptive studies of the casework process and of supervision. Important contributions have been made in these areas not only to social work but to psychiatry. Psychiatric social workers are moving steadily forward toward the recognition of the importance of a research attitude in the teaching and practice of their profession. As social work grows in recognition of its professional status and responsibilities, it may be expected to make increasingly valuable contribution to the understanding of the infinite variety of problems of human experience. One field in which research is only beginning is that of the emotional problems of our aging population. There are more than a hundred men and women on the geriatric service of the Governor Bacon Health Center. We believe that their requirements extend beyond that of adequate medical and nursing care. We would like to develop a project that would become a part of the program of total understanding and care for the older patients. Another area for research is in relationship to the physically handicapped and the exceptional child. Psychiatric social workers are teaching parents to understand the problems of the retarded, the exceptional child and the physically handicapped. Here again, Governor Bacon Health Center is able to study and report on the emotional problems and personality disorganization of children who are crippled, who have a chronic rheumatic heart disease and those with a diagnosis of seizure state.

The programs and resources for training the physically handicapped have received a great deal of publicity. The fears, anxieties, and mechanisms of behavior of this group are not so well understood. There is a great deal of misinformation and misconception concerning this group. We can provide the total rehabilitation of the physically handicapped by learning more of their attitudes and reactions to their handicap through study of the individuals. Dr. Howard Rusk, while attending the International Conference of Physical Medicine in London last month, wrote:

> Attention is being devoted through the world to methods that will permit individuals, regardless of their physical limitations to lead normal productive lives. Each (country) demonstrated that the problems of the handicapped are basically the same, regardless of the nationality, economic ability, language or religion, and that rehabilitation can be achieved not only by helping people to live within the limits of the disabilities but to the hilt of their capabilities. It is also demonstrated that medicine more and more was reverting to the concept that the prime responsibility of the physician is to meet the total needs of his patients rather than merely to treat their diseases.

This report indicates the need for extensive efforts to bring about the education of the general public in mental health principles and concepts. Mental Health has been defined as a "state of well-being, efficiency in work and harmony in human relationships." Since this broader concept implies helping the general public attain the degree of mental health of which they are capable, the public requires the leadership of the professional groups in setting up programs of mental health education. We cannot limit our efforts to only those who use the mental hygiene clinic or the mental hospitals for certainly the majority of people will not use these services. Throughout the history of psychiatric social work, we have given increasingly of time and effort by choice and established professional habit to seek out and use opportunities for education. Our concern with social relationship and community resources is the basic stuff of which mental health education is made. Even as we participate in an educational program, we conceive of it as a two way process from which the participants derive emotional and intellectual benefit and the psychiatric social worker "learns new aspects of her profession and herself along the way." Psychiatric social workers believe that we should work more assiduously at the task of mental health education, evaluate our methods and test our results objectively. We believe that the responsibility and the contribution of psychiatric social work in mental health education is substantial.

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MEDICAL SOCIETY OF DELAWARE

MONDAY, SEPTEMBER 8, 1952

Rehoboth Beach Country Club

7:00 P. M.—Meeting of the Council

8:30 P. M.—Meeting of the House of Delegates

TUESDAY, SEPTEMBER 9, 1952

Rehoboth Beach Country Club

General Meeting

9:30 A. M.—Invocation
Rev. William D. Gibson, D.D.,
Pastor, Presbyterian Church
Rehoboth Beach

9:40 A. M.—Address of Welcome
Hon. Robert D. Thompson
Mayor of Rehoboth Beach

9:50 A. M.—Report of House of Delegates
Andrew M. Gehret, M. D., Wilm.
Secretary, Med. Soc. of Del.

10:00 A. M.—The Physician and the Infertile Couple
Ottakar J. Pollak, M. D., Dover
Pathologist, Kent General, Milford Memorial, and Beebe Hospitals

Minimum diagnostic procedures and therapeutic measures will be outlined and illustrated. It will be shown to what extent the infertile couple can be aided by the general practitioner.

Discussion: Drs. S. W. Rennie and N. L. Cannon.

10:30 A. M.—Some Representative Results of Isonicotinic Acid Hydrazide Therapy
Nathaniel Young, M. D., Wilm.
Physician, Brandywine Sanatorium.

A number of cases are presented with short case histories and with serial x-rays before and during isonictoinic acid hydrazide therapy. An attempt will be made to draw some short-term conclusions as to the use and efficiency of this therapy.

Discussion: Drs. A. J. Morris and L. P. Lang.

11:00 A. M.—**Visit the Exhibits**

11:30 A. M.—The A-B-C of Antimicrobial Therapy
Harrison F. Flippin, M. D., Phila.
Visiting Ward Physician, Philadelphia General Hospital

This discussion deals with the general theme of how to use the antimicrobial agents in the treatment of various infections. Studies of the sensitivity of organisms to these agents as they concern the management of infections will be stressed. The reactions to these agents and methods of controlling, or avoiding, the same will be considered.

Discussion: Drs. W. J. Holloway and J. W. Lynch.

12:10 P. M.—Announcements

12:15 P. M.—Adjournment — Exhibits

12:30 P. M.—Luncheon
Rehoboth Beach Country Club
Members and Guests.
Guests of the Medical Society of Delaware.

2:00 P. M.—Problems Affecting Mal-united and Un-united Femoral Fractures
Paul C. Colonna, M. D., Philadelphia
Professor of Orthopaedic Surgery, University of Pennsylvania.

The author will review the standard methods of treating un-united fractures of the long bones and his experiences with the use of the Kunschner nail. The value of iliac graft chips will be stressed, as well as some of the pitfalls and complications in the intramedullary nailing technique.

Discussion: Drs. I. M. Flinn and D. J. King.

2:40 P. M.—The Present Status of Surgical Treatment of Carcinoma of the Esophagus
John H. Gibbon, Jr., M. D., Phila.
Professor of Surgery and Director of Surgical Research, Jefferson Medical College

A report will be made of 148 cases of carcinoma of the esophagus seen during the past six years at the Jefferson Medical College Hospital. The diagnosis and the end results of treatment will be presented. The follow-up of this group of patients is 100%.

Discussion: Drs. F. A. Jones and J. F. Hynes.

3:20 P. M.—**Visit the Exhibits**

3:50 P. M.—The Present Status of the Management of Urinary Tract Infections

Theodore R. Fetter, M. D., Phila.

Professor and Head of the Department of Urology, Jefferson Medical College.

The success or failure of chemotherapy and the antibiotics in urinary tract infections depends on three primary factors: 1. Adequate and free drainage of urine; 2. Adequate renal functions; 3. Study of the urine in order to determine the infective organism and its sensitivity to the particular urinary agent.

Obstruction due to any cause must be recognized and treated before one should expect optimum results with chemotherapy and antibiotics. Extra-urinary tract factors should be sought for in resistant cases of urinary infection, if urinary causes have been ruled out. Chronic glomerulonephritis and episodes of pyelonephritis indicate that a complete urological study is necessary. Tuberculosis is frequently masked by mixed infection.

Finally, a good history, examination and proper urine study will usually demonstrate the need for further investigation.

Discussion: Drs. N. L. Cannon and V. C. Nah.

4:30 P. M.—Dermatology and the Chiropodist

Reuben Friedman, M. D., Phila.

Clinical Professor of Dermatology and Syphilology, Temple University.

Chiropody, like dentistry, deals with a specific area of the body. Like dentistry, it is intimately related to medicine in general, of dermatological diseases of the feet and lower extremities, the chiropodist encounters and is called upon to recognize and when possible to treat much more than corns, calluses and athlete's foot. Lantern slide illustrations.

Discussion: Drs. I. L. Chipman, Sr., and Lawrence Katzenstein.

4:45 P. M.—The Role of the Chiropodist in Diabetes

Anthony Sindoni, Jr., M. D., Phila.

Chief, Department of Metabolism, Philadelphia General Hospital.

Chiropodists today must take their place among those doctors who will help discover the existence of diabetes and its control after discovery. The patient should be advised to see his chiropodist at frequent intervals and be instructed as to the general care of his feet or lower extremities. He must not wear tight garters or shoes, avoid strong antiseptics, as iodine, as well as hot water bottles and rusty razor blades.

Discussion: Drs. E. M. Bohan and H. A. Tarrant.

5:10 P. M.—Announcements

5:15 P. M.—Adjournment — Exhibits

6:45 P. M.—Reception — Country Club

7:30 P. M.—Annual Dinner

Members and Auxiliary are invited to subscribe. Tickets from Dr. James Beebe, Jr., Lewes. Dress: Optional.

Address: **J. Wallace Woodford, Dover**

WEDNESDAY, SEPTEMBER 10, 1952

Rehoboth Beach Country Club

General Meeting

9:30 A. M.—The American Medical Education Foundation

Charles F. Richards, M. D., Wilm.

Associate in Surgery, Delaware Hospital.

A brief word of explanation of its organization, objectives, and techniques, and a plea for increased cooperation.

9:40 A. M.—The Diagnosis and Treatment of Acute Pancreatitis

Thomas A. Johnson, M. D., Phila.

Associate Professor of Gastroenterology, Graduate School of Medicine, Univ. of Penna.

The availability of serum amylase and lipase tests accounts for the apparent hospital increase in the incidence of acute pancreatitis. The general practitioner must be alerted to the various mechanisms which cause elevations of serum amylase and lipase so that those tests may be properly correlated with the expected signs and symptoms of acute pancreatitis. The details of diagnosis and therapy will be presented.

Discussion: Drs. L. C. McGee and I. L. Chipman, Jr.

10:20 A. M.—The Place of Newer Drugs in the Treatment of Arthritis

John Lansbury, M. D., Philadelphia

Clinical Professor of Medicine, Temple University.

Drugs used for rheumatoid arthritis are of two kinds:

1. Those having a suppressive action, such as salicylates, ACTH, cortisone, hydrocortisone, butazolidin, etc.
2. Those which appear to really alter the course of the disease, such as gold and anti-

biotics. The advantages and disadvantage of each drug is briefly discussed.

Discussion: Drs. C. M. Moyer and A. J. Heather.

11:00 A. M.—Visit the Exhibits

11:30 A. M.—The Community and the Doctor

Ervin L. Stambaugh, M. D., Lewes
President, Medical Society of Delaware.

12:10 P. M.—Election of President-elect for 1953 (Kent County)

12:15 P. M.—Announcements

12:20 P. M.—Adjournment — Exhibits

12:30 P. M.—Luncheon—Country Club
Members, Auxiliary, and Guests
Guests of the Sussex County Medical Society.

2:00 P. M.—Endometriosis

Richard W. Te Linde, M. D., Balto.
Professor of Gynecology, Johns Hopkins University.

Endometriosis which is being recognized with increased frequency is discussed from the standpoint of its etiology and treatment. Recent experimental work as to etiology which was done by Dr. Roger Scott and the author is presented. The clinical aspects of the disease are discussed and the results with therapy are given. Emphasis is placed upon the value of conservative surgery.

Discussion: Drs. S. W. Rennie and A. M. Gehret.

2:40 P. M.—Diagnosis and Management of Uterine Malignancy—a Twenty-five Year Experience

George A. Hahn, M. D., Phila.
Assistant Professor of Gynecology and Obstretics, Jefferson Medical College.

Over 17,000 women die annually from uterine cancer. The early symptoms oftentimes seem insignificant to the patient. Diligent history and examination will oftentimes detect early cancer. The results of the treatment of cervical cancer at Jefferson Medical College are outlined, showing a steady improvement as techniques have improved. At present the five year survival rate is 47.6 per cent.

Discussion: Drs. J. F. Hynes and O. N. Stern.

3:20 P. M.—Acknowledgments

3:30 P. M.—Adjournment

3:30—5:00 P. M.—Exhibits

WOMEN'S AUXILIARY
to the
MEDICAL SOCIETY OF DELAWARE
TUESDAY, SEPTEMBER 9, 1952
Dinner Bell Inn

President, Mrs. S. W. Rennie, Wilmington
President-elect, Mrs. W. F. Preston, Wilm.
Vice-President, Mrs. C. C. Fooks, Milford
Recording Sec'y, Mrs. J. B. Baker, Milford.
Corresp. Sec'y, Mrs. E. T. O'Donnell, Wilm.
Treasurer, Mrs. L. L. Fitchett, Milford.

10:00 A. M.—Registration

10:30 A. M.—23rd Annual Meeting
Mrs. Sylvester W. Rennie, Presiding.
Invocation—Rev. Richard Bailey
Pledge of Loyalty—Mrs. C. E. Wagner
Address of Welcome—Mrs. E. L. Stambaugh
Response—Mrs. R. B. Thomas
Introductions
Roll Call of Delegates—Mrs. J. B. Baker
Minutes of 22nd Annual Meeting—Mrs. J. B. Baker
Credentials and Registration—Mrs. James Beebe, Jr.
Treasurer's Report—Mrs. L. L. Fitchett
Report of Auditing Committee—Mrs. C. C. Fooks
President's Report—Mrs. S. W. Rennie
Reports of County Presidents:
New Castle, Mrs. L. J. Jones
Kent, Mrs. J. B. Baker
Sussex, Mrs. J. L. Fox
Announcements
Old Business
New Business
Guest Speaker—Mrs. Luther H. Kice, Past National President, and member of the Board of Directors of the Woman's Auxiliary to the A.M.A.

12: Noon—Adjournment

1:00 P. M.—Luncheon—Dinner Bell Inn
Invocation—Rev. William D. Gibson
Speaker—Mrs. John J. Williams: Congressional Wives' Activities

Guests—State Presidents from New York, New Jersey, Pennsylvania, Maryland, and District of Columbia

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2:30—5:00 P. M.—Exhibits

6:45—Reception — Country Club

7:30 P. M.—Annual Dinner

Members and Auxiliary are invited to subscribe. Tickets from Dr. James Beebe, Jr., Lewes. Dress: Optional.

Address: **J. Wallace Woodford, Dover**

WEDNESDAY, SEPTEMBER 10, 1952

Dinner Bell Inn

10:30 A. M.—Business Meeting

Call to Order—Mrs. S. W. Rennie

Roll Call of Delegates—Mrs. J. B. Baker

Minutes—Mrs. J. B. Baker

Report of 1952 National Convention—Mrs. L. L. Fitchett and Mrs. D. M. Gay

Reports of Committee Chairmen:

Nurses Scholarship—Mrs. J. C. Pierson

Public Relations—Mrs. D. M. Gay

Civil Defense—Mrs. R. W. Murray

Organization—Mrs. W. F. Preston

Old Business

New Business

Report of Nominating Committee—Mrs. Douglas M. Gay

Election of Officers

Installation of Officers

Presentation of Gavel and President's Pin to Mrs. W. F. Preston by Mrs. S. W. Rennie

Inaugural Address—Mrs. Willard F. Preston

12:00 Noon—Adjournment

12:30 P. M.—Luncheon—Country Club
Members, Auxiliary and Guests

Guests of the Sussex County Medical Society

2:00—5:00 P. M.—Exhibits

TECHNICAL EXHIBITS

Booth No. 1

Delaware State Board of Health
Dover, Del.
and
Delaware Anti-Tuberculosis Society
1308 Delaware Avenue
Wilmington, Del.
Statistics

Booths Nos. 2 and 3

John G. Merkel & Sons
1208 King Street
Wilmington, Del.
Instruments and Supplies

Booth No. 4

Acousticon-Neumeyer Co.
832 Market Street
Wilmington 24, Del.
Hearing Aids

Booth No. 5

McNeil Laboratories, Inc.
2900 N. 17th Street
Philadelphia 32, Pa.
Pharmaceuticals

Booth No. 6

Philip Morris & Co., Ltd., Inc.
100 Park Avenue
New York 17, N. Y.
Cigarettes

Booth No. 7

Doho Chemical Corporation
100 Warwick Street
New York 13, N. Y.
Pharmaceuticals

Booth No. 8

Eli Lilly and Company
Indianapolis 6, Indiana
Pharmaceuticals

Booth No. 9

Burroughs Wellcome & Co. (U.S.A.) Inc.
1 Scarsdale Road
Tuckahoe, N. Y.
Pharmaceuticals

Booth No. 10

Palmer B. Rawley
177 Fairview Avenue
Rutherford, N. J.
Hearing Aids

Booth No. 11

Ayerst, McKenna & Harrison, Ltd.
22 East 40th Street
New York 16, N. Y.
Pharmaceuticals

Booth No. 12
Mead Johnson & Company
Evansville, Indiana
Pharmaceuticals

Booth No. 13
U. S. Vitamin Corporation
250 E. 43rd Street
New York 17, N. Y.
Pharmaceuticals

Booth No. 14
W. B. Saunders Company
West Washington Square
Philadelphia 5, Pa.
Medical Books

Booth No. 15
Charles Lentz & Sons
33 S. 17th Street
Philadelphia 3, Pa.
Instruments and Supplies

Booth No. 16
Walden Industries, Inc.
350 West 50th Street
New York, N. Y.
Clinical Photography

Booth No. 17
Parke, Davis & Company
Detroit 32, Michigan
Pharmaceuticals

Booth No. 18
E. R. Squibb & Sons
32-14 Northern Blvd.
Long Island City 1, N. Y.

Booth No. 19
Sandoz Chemical Works, Inc.
68 Charlton Street
New York 14, N. Y.
Pharmaceuticals

Booth No. 20
Bennett Company
3415 Walnut Street
Philadelphia, Pa.
Pharmaceuticals

Booth No. 21
Delaware Academy of General Practice
1305 New Road
Wilmington 5, Del.
X-ray Apparatus

Booth No. 22
Sherman Laboratories
1034 S. 54th Street
Philadelphia 43, Pa.
Pharmaceuticals

Booth No. 21
Delaware Academy of General Practice
1305 New Road
Wilmington 5, Delaware
Information

BOOK REVIEWS

Practical Clinical Psychiatry—By Edward A. Strecker, M.D., Professor of Psychiatry, University of Pennsylvania; Franklin G. Ebaugh, M.D., Professor of Psychiatry, University of Colorado; and Jack R. Ewalt, M.D., Professor of Neuro-Psychiatry, University of Texas. Section on Psychopathologic Problems of Childhood—by Leo Kanner, M.D., Associate Professor of Psychiatry, Johns Hopkins University. Seventh Edition. Pp. 506, with 35 figures. Cloth. Price, $7.00. Philadelphia: Blakiston Company, 1951.

In the preface to the seventh edition Dr. Strecker states that "valiant efforts are being made in a few areas to train more physicians to become psychiatrists." This is a very valuable text book for advanced students, physicians and young psychiatrists.

The fifteen chapters of this excellent book deal with almost every psychiatric problem. Especially the first and second chapters of this book will be of great value to the young psychiatrists in their study. These two chapters present an excellent approach to the subject of clinical psychiatry. The clarity of description of the symptoms of each entity is superb.

We wish to congratulate the authors for this exceptionally fine text book, which should find its way to the medical libraries of physicians and hospitals.

Mental Disorders: Diagnostic and Statistical Manual. Pp. 130. Cardboard. Price, $1.50. Washington, D. C.: American Psychiatric Association, 1952.

This is an exceptionally well written manual incorporating all the new diagnostic principles of modern psychiatry and neurology. Various sections include the diseases of the psychobiologic unit; disorders caused by or associated with impairment of brain tissue function; mental deficiency; disorders of psychogenic origin; the revised nomenclature as approved by the American Psychiatric Association. The definition of terms is written well. The very important sections four and five include basic principles of statistical reporting and statistical classification of mental disorder. We wish to congratulate the Committee on Nomenclature and Statistics of the American Psychiatric Association. We recommend this manual very highly to all mental hospitals.

Dynamic Psychiatry: Basic Principles. Volume I. By Louis S. London, M.D. Pp. 98. Cloth. Price, $2.00. New York: Corinthian Publications, Inc., 1952.

The author in this first volume graphically describes the historical background of the evolution of psychotherapeutics. He describes how Hippocrates refused to accept the belief of the ancients that mental diseases have a transcendental origin. The theory of Hippocrates that psychical activity is a function of the brain was not accepted by all his followers. Then Cicero advanced the theory that in mental disorders the whole personality and not a single organ of the body is affected. Celsus believed mental patients should be freed from various fears. The author continues historical data from Zilborg's book. He speaks of how Aretarius defined melancholia and Soranus describes the symptomatology of mental disorders and tells how the world entered into the "twilight of the Dark Ages" after the passing of Galen. In the second chapter of the volume the author describes various dreams and their meaning. In chapter three the author speaks of psychology of the libido. He speaks of various component parts of the libido. Dr. London has adequately described the basic principles of Dynamic Psychiatry.

Living In Balance. By Frank S. Caprio, M.D. Pp. 246. Cloth. Price, $3.75. Washington, D. C.: Arundel Press, Inc., 1952.

This is an exceptionally well written popular book. The book explains the causes of many of our emotional conflicts. In chapter one the author describes various life's conflicts. In the second chapter Dr. Caprio tells his readers about the normal mind and its balance. Chapter four gives a very good concept about the neurotics. In other chapters the author describes very understandingly the various diseased conditions of the brain and mind. We wish to congratulate the author for this fine book and we recommend for laymen as well as members of the bar and medical profession.

Dynamic Psychiatry: Transvestism, Desire for Crippled Women. Volume 2. By Louis S. London, M.D. Pp. 129, with 49 figures. Cloth. Price, $2.50. New York: Corinthian Publications, Inc., 1952.

This is a most interesting little book composed of three very unusual chapters. In the first chapter the author describes transvestism from an anthropological and historical viewpoint. The author describes one patient very vividly. The second chapter has fifty psychobiographic fantasies drawn by a patient and described in his own language. These drawings are very interesting and unusual. In the third chapter the author describes a case of transvestism very interestingly. We recommend this book in two volumes for all individuals interested in this subject and for public libraries.

Working Programs in Mental Hospitals: Proceedings of the Third Mental Hospital Institute. Pp. 224. Cardboard. Price, $2.50. Washington, D. C.: American Psychiatric Association, 1952.

This book contains the proceedings of the Third Mental Hospital Institute, held in Louisville on October 15-18, 1951. In section one the needs of the mental hospitals are discussed by many members of the Institute. The new hospital standards are the main topics discussed in section two. Section three contains many phases of the ward personnel. Section four contains important material on ward management. There are many other sections dealing with hospital-university relationships, with research, and with intensive treatment. We congratulate the publishers, editors and associate editors for this splendid book, and we recommend it to all mental hospitals and medical libraries.

The Battle For Mental Health—By James Clark Moloney, M.D. Pp. 105. Cloth. Price, $3.50. New York: Philosophical Library, 1952.

This is a very interesting little book. The author places the responsibility for mental illness upon current medical methods. Dr. Moloney uses many clinical and anthropological observations.

The author to prove his theories uses a great many statistical data. The author criticizes present structural aspects of our hospitals, particularly the maternity wards, where he says: "Of course, I refer to the hospital as we now know it, with its coldly efficient maternity wards and its central nurseries, is an undesirable setting in which to give birth to a child and for the child to have its first contacts with human beings, especially its mother."

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THE DELAWARE HEALTH AND MEDICAL SERVICE PLAN FOR CIVIL DEFENSE

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The State Board of Health, through its Executive Secretary, has for the past two years had the responsibility of state-wide planning for the public health and medical service activities of the State Civil Defense program. A preliminary plan was outlined in 1950, which has since been revised and expanded. No planning of this sort can produce satisfactory results without the full understanding of the physicians of Delaware. Cooperation of the state and county medical societies, dental societies, hospital associations, and other auxiliary organizations is essential. For the information of these individuals and groups, the following revision of the basic Health and Medical Service Plan is being provided:

Delaware Office of Civil Defense
Health and Medical Services Plan
(Revised)

1. *Mission*

To preserve mental and physical health and life in time of disaster caused by enemy attack, sabotage, or other hostile action by:

1.1 Relieving immediate suffering following an enemy attack.

1.2 Reducing disability and preventing death.

1.3 Restoring and maintaining normal health services and functions.

1.4 It is assumed that such disaster will require the augmentation, mobilization, organization and direction of all medical and public health facilities, resources, and personnel of regularly constituted health and medical organizations within the State.

2. *Organization*

2.1 The Health and Medical Services Division consists of a Chief, a Deputy Chief, a headquarters staff, and seven sections, which are:

- 2.111 Emergency Medical Section
- 2.112 First Aid Stations Section
- 2.113 Transportation and Supply Section
- 2.114 Public Health and Sanitation Section
- 2.115 Vital Statistics Section
- 2.116 Training Section
- 2.117 Personnel Section

2.12 The Chief of the Division is responsible for the procurement, organization, training, and mobilization of medical and public health services and facilities.

2.13 The head of each section or subsection is responsible for recruiting the necessary staff for his service.

2.14 The organizational chart of the Division is shown in Appendix A.

2.2 The Emergency Medical Services Section is responsible for emergency medical care of casualties, including hospitalization, supervision of the emergency mortuary services, hospital laboratories, and the care and disposition of the undischarged hospital census at the time of disaster.

2.21 The Section is organized into three sub-sections, which are:

- 2.211 Emergency and Reserve Hospitals Sub-Section
- 2.212 Mortuary Sub-Section
- 2.213 Laboratory Sub-Section

2.3 The First Aid Stations Section is responsible for the development of plans and procedures for the establishment and functioning of first-aid stations.

2.31 The organization and operation of first-aid stations is the responsibility of the County Director and the Local Civil Defense Director.

2.4 The Training Section is responsible for developing training programs and di-

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LIBRARY OF THE
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rectives, supplying training material, and when requested, securing instructors so as to insure complete readiness and training of the Division.

2.41 The Section is organized into three sub-sections, which are:

2.411 Public Health Education Sub-Section

2.412 Emergency Medical Training Sub-Section

2.413 Casualty Traffic and Movement Training Sub-Section

2.5 The Transportation and Supply Section is responsible for the procurement, storage, issue, and distribution of State medical and public health supplies, and through the Ambulance Sub-Section is responsible for the transfer of casualties under the care of the Division.

2.51 The Section is organized into four sub-sections, which are:

2.511 Ambulance Sub-Section

2.512 Supply Transportation Sub-Section

2.513 Emergency Medical Supplies Sub-Section

2.514 Public Health Supplies Sub-Section

2.6 The Public Health and Sanitation Section is responsible for the development of the plans for the mobilization of public health facilities, including sanitary and veterinary personnel, to prevent, control and limit disease, and the effects of bacteriological warfare.

2.61 The Section is organized into three sub-sections, which are:

2.611 Preventive Medicine Sub-Section

2.612 Sanitation Sub-Section

2.613 Veterinary Sub-Section

2.7 The Vital Statistics Section is responsible for the registration of deaths, births, marriages, and divorces of human beings. To insure as complete a registration as possible at the time of disaster, the section will organize trained registration teams, who will be made available to the Mortuary Sub-Section of the Emergency Medical Services Section.

2.8 The Personnel Section is responsible for maintaining a roster of known available physicians and surgeons, dentists, nurses, veterinarians, physical therapists, chiropractors, morticians, pharmacists, and other auxiliary medical personnel in the State. This roster shall include names, addresses, telephone numbers, civil defense duty assignments, and such other data as directed by the Chief of the Health and Medical Services Division.

2.81 Upon request of a County or Local Civil Defense Director, a separate roster of the medical and health services personnel of that area will be provided.

3. *Operations*

3.01 Action to be taken on the Yellow Alert:

3.011 Personnel to be notified by the State Director: The Chief of the Health and Medical Services Division. No further action on the Yellow Alert.

3.02 Action to be taken on the Red Alert:
All personnel notified through the Civil Air-Raid Warning System.
All personnel take cover.

3.03 Action to be taken on the White Alert:

3.031 All personnel report to their civil defense post.

3.032 The Chief of the Health and Medical Services Division will remain at the executive offices of the State Board of Health at Dover.

3.033 The Deputy Chief of the Division will proceed to the State Control Center.

3.034 Special groups will take action as follows:

3.0341 First Aid personnel will report to assembly points.

3.0342 Emergency hospital teams will report to hospitals.

3.0343 Ambulance service will report to predesignated locations.

3.0344 Emergency Medical Supply sub-section will establish contact with and supply emergency hospitals according to the initial supply plan, which is given in Appendix B.

3.0345 Sanitation sub-section will determine the availability of reliable water and milk supplies.

Public Health Nurses will report to welfare centers, according to the plan given in Appendix C.

3.1 *Emergency Medical Services*

3.11 The Emergency and Reserve Hospitals Sub-Section will establish hospitals, each headed by a Director appointed by the Chief of Emergency Medical Services Section, at predesignated hospitals, schools, or other suitable locations, which are given in Appendix D.

3.111 If the initial location cannot be used because of damage, the personnel will report to an alternate location.

3.112 It may become necessary to establish hospitals in excess of the predesignated number. In selecting buildings for such use, special attention should be given accessibility to:

3.1121 Reliable water supplies.

3.1122 Electric power supplies, including emergency power plants.

3.1123 Sewage disposal facilities.

3.1124 Workable transportation routes to first-aid stations.

3.1125 Adequate heating and kitchen facilities which are essential. Laundry facilities are very desirable.

3.113 All existing usable hospital facilities will function as emergency or reserve hospitals, depending on their distance from the location of principal disaster. Designation of facilities as either emergency or reserve hospitals will be the responsibility of the Chief of the Division.

3.12 *Personnel*

Each emergency hospital will be staffed by an emergency medical team of basic strength sufficient to provide emergency hospital care for one hundred casualties. Emergency hospital populations in excess of one hundred will be cared for by additional whole or partial teams as required.

3.121 Detailed analysis of staff requirements and duties are outlined in a standard administrative manual, which is Appendix E.

3.131 The hospital Director is responsible for maintaining liaison with the Supply and Transportation Section, and developing coordinated prearranged plans and procedures for the initial movement of emergency supplies to his hospital.

3.132 The hospital Director is responsible, through his staff, for recording admissions, discharges, and deaths of casualties in his hospital.

3.133 The hospital Director is responsible for liaison with the County first-aid organization to insure that a first-aid station is located immediately adjacent to the hospital.

3.1331 The principal duty of this first-aid station will be to provide first-aid services to those casualties who seek admission to the hospital, but lack first-aid screening.

3.134 The hospital director is responsible for maintaining a morgue for the proper care of casualties who die in his hospital. He will maintain liaison with the mortuary sub-section.

3.14 Casualties at an overloaded emergency hospital who, when received or after emergency care, can be transferred without undue injury or suffering to a reserve hospital ,and who require further hospitalization, will be so transferred.

3.15 *Mortuary Sub-Section*

3.151 The Mortuary Sub-Section is responsible, through liaison and coordination with the County Civil Defense Director and his mortuary staff representative, usually the County Coroner, for:

3.1511 The establishment of mortuary centers.

3.1512 The preparation and distribution of forms necessary for the operation of emergency mortuary centers.

3.1513 Designation, in advance of the time of disaster, through coordination with the County Director and his representatives, usually including the County Engineer and the County Coroner, of suitable locations for emergency cemeteries and receiving vaults, and of areas for mass graves.

3.1514 Prompt removal of dead casualties from a disaster area, first-aid stations, emergency hospitals, and any other point of death, to the emergency mortuary center.

3.1515 Identification of dead casualties.

3.1516 Registration of deaths, in cooperation with the Vital Statistics Section teams, and in accordance with established legal procedure.

3.1517 Proper burial of casualties, including religious ceremonies appropriate to the burial.

3.1518 Coordination, including training where required, with all civil defense personnel, whose principal duties are likely to involve dead casualties.

3.16 *Laboratory Sub-Section*

3.161 The Laboratory Sub-Section is responsible for the clinical laboratory services necessary in hospitals.

3.162 The Laboratory Sub-Section will organize a sufficient number of Blood Supply teams to supply the blood requirements of hospitals during a disaster caused by enemy attack, sabotage, or other hostile action. The organizational chart is given in Appendix F.

3.1621 The Blood Supply team is responsible for the collection of blood obtained from individual donors.

3.163 The Laboratory Sub-Section will incorporate all available facilities and personnel of the American Red Cross Blood Program.

3.2 *First Aid Station Section*

3.21 The First Aid Station Section will assist the County Civil Defense Director in organizing first-aid facilities in his area by recommendations concerning:

3.211 The number of first-aid stations needed in his area.

3.212 The staff required for each first-aid station, which is given in Appendix G.

3.213 The supplies required for each first-aid station, which are listed in Appendix H.

3.214 Functions of the first-aid station, which are:

3.2141 Tagging and evacuation of the wounded from the disaster area.

3.2142 The control of hemorrhage.

3.2143 The control of pain.

3.2144 The treatment of shock.

3.2145 Application and adjustment of splints.

3.2146 Dressing of wounds.

3.2147 Giving anti-biotics.

3.2148 Screening of casualties for transfer to hospitals or for discharge.

3.2149 Completion of *standard tag for patients.*

3.21410 The maintenance of a log of all casualties treated.

3.22 The point of initial assembly of personnel, and storage of initial first-aid supplies, for each first-aid station, should be predesignated. The first-aid station is responsible for furnishing its own transportation from the assembly point to the point of operation.

3.23 As soon as the first-aid station can be moved forward from its established location of operation to a point nearer the center of disaster, such a move should be made, but close contact must be maintained with the Ambulance teams serving the station to assure that ambulances report to the proper collecting area.

3.24 The head of a first-aid station should establish an emergency morgue near to the first-aid station for the proper care of dead casualties at the first-aid station, and should maintain liaison with the Mortuary Sub-Section to insure their prompt removal.

3.25 The head of a first-aid station is responsible for requesting additional first-aid supplies from the supply section.

3.26 If initial mobilization cannot be accomplished because of inaccessibility or major damage of initial supplies, the first-aid team should assemble, the head should report the status of the station to the local civil defense control center and request additional supplies.

3.27 First-aid stations should establish collecting areas for the disposition of treated casualties awaiting transfer to hospitals.

3.271 The Ambulance Service will be responsible for the transportation from the collecting area to the hospital.

3.28 First-aid litter teams are responsible for tagging all casualties found in the field for their movement to the first-aid station.

3.281 The first-aid station is responsible for tagging any untagged casualties treated.

3.3 *Transportation and Supply Section*

3.31 Ambulance Service Sub-Section: The Ambulance Service will transport casualties from:

3.311 First-aid station collecting areas to emergency hospitals.

3.312 First-aid station collecting areas to reserve hospitals.

3.313 Emergency hospitals to reserve hospitals.

3.314 Medical and health facilities to homes, or other locations when required.

3.32 The transportation equipment of the Ambulance Service must be designated and assigned in advance of the time of disaster, and should not be used for purposes other than the transportation of casualties.

3.321 All existing ambulances and hearses will be designated as part of the transportation equipment of the Ambulance Service.

3.322 Station wagons, panel trucks, and modified pickup trucks will form additional sources of transportation equipment for this service.

3.323 Arrangements should be made in advance to provide adequate supplies and issue of fuel and lubricants to insure ambulance service without interruption.

3.324 Those persons whose facilities have been designated for use in the ambulance service are urged to maintain their equipment in readiness at all times, especially in regard to the mechanical condition, lubrication, and gasoline supply.

3.325 Each ambulance should be equipped with a first-aid kit which is listed in Appendix K.

3.326 Each ambulance should be equipped with litters and blankets sufficient to effect an exchange of such when it is necessary to transfer casualties on equipment belonging to first-aid stations or hospitals.

3.33 Ambulance personnel should be well trained in first-aid, as they are responsible for the care of casualties during the period of transfer.

3.34 An ambulance dispatcher must be provided in each first-aid station collecting area, and each hospital facility, to insure proper flow of ambulances. At large hospital facilities, a separate section for the reception of ambulances may be required.

3.35 The Supply Transportation Sub-Section will provide, through coordination with the Transportation Division of the State Department of Civil Defense, the necessary vehicles to transport medical and health supplies from the storage points to the points of issue and delivery.

3.351 Special procedures must be developed, as prescribed by the Federal government, for the handling of special drugs, such as narcotics.

3.36 *Emergency Medical Supplies Sub-Section*

3.361 The First-Aid Station Supply team will issue additional first-aid supplies to stations on a package basis, when such supplies are ordered by the head of a First-Aid Station.

3.362 The Pharmaceuticals team will issue standard drugs and biologicals to hospitals or other facilities prescribed by the Chief of the Division.

3.363 Surgical Textiles team will issue dressings and other surgical textiles to hospitals and other facilities prescribed by the Chief of the Division.

3.364 The Equipment team will issue medical equipment such as instruments, to directors of hospitals, or heads of First-Aid Stations, as requested.

3.37 The Public Health Supplies Sub-Section will secure, store, and issue necessary supplies for purification of drinking water, milk sanitation, insect and rodent control, and veterinary and other public health requirements.

3.4 *Training Division*

3.41 The Public Health Education Sub-Section will utilize the normal channels of communication of the State Board of Health in preparing its technical publications and in releasing public health information to the State.

3.42 The Emergency Medical Services Sub-Section will utilize the facilities of the State Board of Health, and in addition, whenever possible, use the facilities of the

State Medical, Dental, and other professional societies, and state and national publications.

3.43 The Casualty Traffic and Movement Training Sub-Section will prepare and conduct any training necessary to insure that the Health and Medical Services are able to maintain an even and continuous flow of casualties resulting from a disaster.

3.5 *Public Health and Sanitation Section*

3.51 The head of the Preventive Medicine Sub-Section will direct and supervise the mobilization of State and local health department staffs for the prevention of disease and for defense against bacteriological warfare.

3.52 The local health departments will be responsible for plans to control communicable diseases, for conducting the necessary immunization, for the maintenance of public health services for mothers and children — including public health nursing service in welfare centers —for the establishment and coordination of public health laboratory facilities in local areas, and for promoting mental hygiene.

3.53 The local health department will conduct, in cooperation with the Sanitation Sub-Section, field investigations, when required, to determine the existence of bacteriological contamination and initiate such control measures as are required.

3.54 Prior to the time of disaster the Sanitation Sub-Section will establish emergency sanitation standards and designate emergency water supply.

3.541 Following a disaster, they will, through the local health departments, maintain pure water supplies, examine milk facilities to insure a safe milk supply, and recommend sources to replace those made inoperative.

3.55 They will provide for frequent inspection of the preparation and serving of food at emergency feeding centers and hospitals, and other public feeding centers.

3.56 They will direct proper disposal of waste and sewage, and supervise the sanitation of emergency housing areas. They will plan adequate measures for the control of insects and rodents following a disaster.

3.57 The Veterinary Sub-Section will carry out the same health measures with regard to animals as the Preventive Medicine Sub-Section carries out with human beings.

3.571 They will cooperate with the Sanitation Sub-Section in the initial investigation of food and milk facilities following a disaster.

3.6 The Vital Statistics Section will be the Vital Statistics Bureau of the State Board of Health.

3.7 *Personnel Section*

3.71 The Personnel Section will be the normal personnel record facilities of the State Board of Health.

3.72 This Section will not recruit personnel for the Health and Medical Services Division.

The above plan indicates that the staff of the State Board of Health, with the assistance of the State Office of Civil Defense, have many duties, such as coordinating local resources, the training of key personnel, the acquisition of and storage of supplies, together with the total duties mentioned in the plan. Much has already been accomplished. Medical and first-aid supplies have been ordered, and for the large part delivered, to take care of the first few hours of an emergency. Emergency hospital facilities for 18,000 casualties have been established and considerable training of key personnel and nurses has already been done. There is yet much training, assignment of voluntary personnel, and details of operation to be completed. All physicians are urged to give their loyal and continuous support to the program instituted to save every possible life, should an actual enemy attack occur. Such action will not only assure our own survival, but also the survival of our state and nation.

Note: Appendices mentioned in the plan will be available to persons interested, upon request. They are too lengthy for publication with this paper.

POPULATION GAINS DURING THE PAST DECADE

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The population gains in Delaware continue at an unabated rate due to the excessive number of births and the continuing lower general mortality rates. During 1951 the number of births in Delaware set an all time high. There were 8203 births. which numbers 325 more than the previous high number registered in 1947. A similar pattern has prevailed throughout the United States during the past few years, wherein the excessive number of births has shattered all previous predictions and estimations. Each year for the past five years more than 3,500,000 have been recorded in the United States. When the estimated number of unregistered births are totaled with those registered for the country, we have a number that will closely approach the 4,000,000 mark in 1951. The recent increase in all areas of the country reflects in part the increase in the marriage rate after the start of the war in Korea. Even more important, the improved economic conditions of recent years appear to have brought a more favorable attitude toward earlier marriage, starting families, as well as the creation of larger families.

In practically all areas of the country, marked developments have taken place in population growth during the past few years. These developments may have been unfavorable in a few areas as a result of emigration of wage earners and their families in pursuit of better wages and living prospects. In Delaware such developments were favorable. From 1940 to 1950 there was a gain of 51,585 inhabitants as shown by figures of the seventeenth decennial census conducted in 1950. There was nearly a 20 percent gain in the decade mentioned. Still more striking is the fact that Delaware gained during this period extra numbers of people nearly as great as the entire population of Sussex County in 1940. Many of these people (14,021 in number) migrated to the state as a labor force in order to benefit from employment opportunities offered by Delaware's industrial facilities. The gain shown (51,585) from 1940 to 1950, less immigration (14,021), results in the number 37,564 which is relatively a group reproduced from the existing population of Delaware. This natural increase in the population has flourished. Since 1940, through a high rate of natural increase, Delaware's population has been boosted 37,564 individuals; to the extent of the entire population of Kent County; to the extent of ten of our largest incorporated towns exclusive of the City of Wilmington. This is a sizeable number of people considering that it has taken place within the past few years—since 1940.

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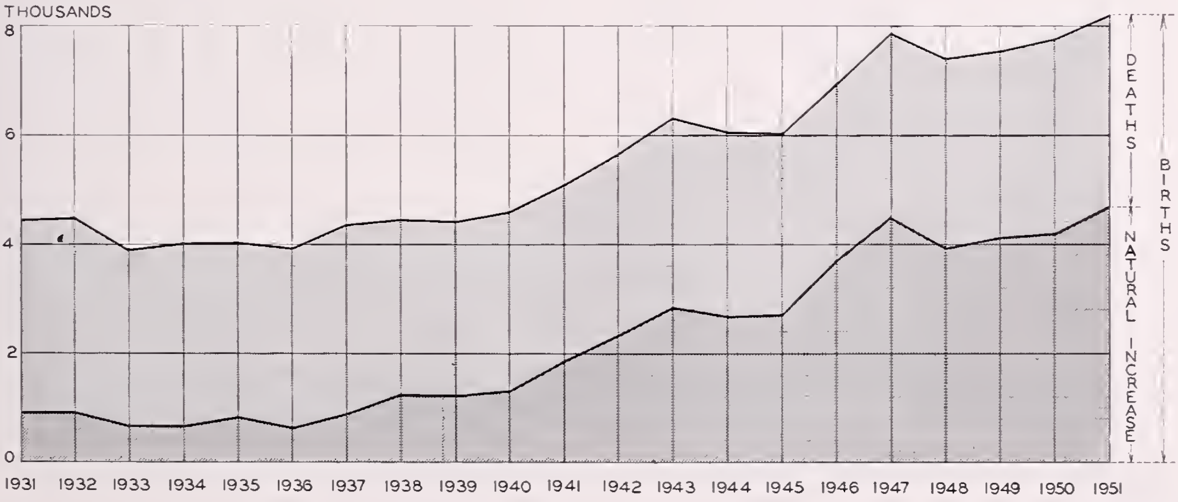
BIRTHS, DEATHS AND NATURAL INCREASE IN POPULATION
DELAWARE, 1931—1951



Twenty-five thousand by natural increase of population have been added since the close of World War II. Needless to say, no like period in the growth of our state has been experienced previously. Since World War II 45,759 births have been registered in Delaware and 20,546 deaths. The births minus the deaths leaves a remainder of 25,213 which is called the natural increase in the population.

The accompanying chart shows the contribution to Delaware's population by large numbers of births and consequently to the remarkable growth of the State during late years.

A noteworthy accomplishment contributory to our growth is the lowered infant mortality rate and the continued lowering of the general mortality rate. The rate of general mortality prevailing a decade ago would have resulted in three to five hundred more deaths per year than we are having at the present time.

Light upon the records of our time show us in an extremely favorable position in the growth of our state and nation—a high natality rate, a low mortality rate, and some contribution to increase the longevity of man becoming apparent each year. It will be an accomplishment, indeed, if the well being of man progresses as favorably. The great vitality of our people being so recorded, we may look forward to the richness of a healthy and expanding economy.

WATER IS MANNA FROM HEAVEN

Preservation Of Its Quality Is A Basic Necessity To Our Health, Comfort And Economy

A. Joel Kaplovsky, Ph.D.,*
Dover, Del.

Rain, snow, hail and sleet are precipitated upon the surface of the earth and may be considered as the original source of all water. Part of this water becomes available for direct use in stream flow and ground water, and part is lost through processes of evaporation and transpiration.

The capacity of the atmosphere to retain water vapor is a function of the temperature so that when the temperature of the atmosphere falls below the dew point, the temperature at which the atmosphere becomes saturated with moisture, precipitation results. The factors involved in this phenomenon are many and their interrelation is complex. Some of these factors are: temperature, barometric pressure, prevailing winds, mountain barriers, relative position of land and water areas, and altitude.

Precipitation from above will normally infiltrate into the earth, constitute surface runoff, be absorbed by vegetation, and partly evaporate as it is falling. Water infiltration into the ground will either be a source of water for vegetation, for the soil, water to the streams, or ground water to the oceans. Water remaining upon the ground surface will evaporate in various ways and return to the heavens above from which it may again be precipitated. This cycle, fortunately, is a continuous one. Water may return to the skies by evaporation during its falling, evaporation from vegetation, evaporation from ponds and open storage areas, transpiration from trees, evaporation from soil, evaporation from streams, and also evaporation from the ocean.

The largest and most accessible supply of water for both domestic and industrial purposes is made available during surface runoff, that is, in streams. Water precipitated from the atmosphere, high above the earth's surface, is practically pure. As the water descends, it will take into solution the common constituents of air, such as oxygen, nitrogen, and carbon dioxide. As precipitation approaches the earth, it will also absorb dust, smoke, and fumes which are present in the atmosphere. In addition, bacteria and the spores of microscopic organisms may also be included and consequently considered as a portion of atmosphere pollution. The concentration of atmospheric pollution is directly related to the type of city and industrial establishments in the vicinity. The amount of impurities derived from the atmosphere is generally small and decreases with the duration of the rainfall and often are not significant from a sanitary standpoint. These atmospheric waters are also lacking in hardness-producing mineral matter and are soft and quite corrosive. As the water strikes the earth's surface and passes through various environments, the characteristics of the water itself will vary considerably.

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The amount of surface material carried into the streams depends upon the character of the surface material and the relative steepness of the catchment area. In general, if the area is steep, the rapid runoff tends to cause rapid erosion and vice versa. Mountain streams, on the other hand, are often clear and prairie streams muddy due to differences in surface soil. At its headwaters in the mountains, a stream which has been formed due to precipitation is relatively pure.

The water was only pure at its original source, that is, in the upper atmosphere. Organic residues of plant and animal life are either dissolved from the upper layers of the soil and the forest loam or are carried into the stream as insoluble suspended matters by surface wash. All these materials, although from natural sources, are foreign to the water itself and even if they are unobjectionable, constitutes stream pollution in a strict sense. The organic residues, picked up from the soil, constitute the nutrient basis for the development of bacteria, microscopic animal and plant life. These nutrients, in turn, are food for successful life stages, such as worms, mollusk, insect larvae, etc., down through the major fish life of fresh and salt waters.

The relatively pure upland streams and lakes provide scenic beauty and recreational facilities. Greater appreciation and wider use of these national assets have stimulated considerable interest in reforestation and for survey studies and cooperative soil erosion land management programs. The freedom of the waters in a mountain stream may be short-lived, for these waters may find themselves impounded in a storage reservoir. Storage is the first instance which represents regulated control of runoff. This storage reduces the inherent undesirable aspects of unregulated streams with its spring floods, summer droughts, and occasionally years of extremely low total yield. The upstream storage may also be the source of water supply, flood control, irrigation, power, low dry weather flow, and salinity control. In addition, during the storage period sedimentation, siltation, and color reduction are affected. Temperature variations which induce "turn-over" brings undecomposed food from the bottom and therefore improves the water quality during its period of retention.

As the waters reach the plains the increased sources of pollution associated with increased activities, such as agriculture, rural and urban populations including industry, come into the picture. Smaller amounts of pollution may reach the tributary waters through the runoff from areas assigned to agricultural and swampy areas, but the latter often contribute high concentrations of organic color. Also increased plant and animal micro-organisms may find their way to the waters of the streams from these areas.

The advantages of storage are not always without certain disadvantages. Development of plant and animal life, especially microscopic life, to an extent which may bring about undesirable changes in water quality may prove detrimental. In domestic water supplies microscopic blooms are often the basis of taste and odors usually found in potable water. There are various ways of reducing these disadvantages to a minimum, and these methods are employed throughout the country.

Further downstream we often find an industrial community which in former years had invariably discharged their wastes, untreated, directly into a nearby stream. This waste disposal by dilution was practiced for many years but with increasing development throughout the country, it has become apparent that these polluted waters are now seriously needed for process waters and often domestic water supplies. Specifications for process water of many industries, such as textile and paper, are high and the presence of most wastes are objectionable. It is often necessary, therefore, to place restrictions upon the assumed riparian rights of some of these mill owners in order that the actual rights of others, downstream, may not be infringed upon.

In our present day and age we continually find that water, our most important resource, can be affected harmfully by unjustified usage, specifically when little or no consideration is given to the quantity of wastes dis-

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charged to receiving streams. Certain natural pollution entering the stream through surface washings and drainage can be absorbed by a stream without ill effect. Every body of water has an ability to self-purify provided the pollution received is not so excessive as to overtax or upset its natural biological balance. Before this biological balance could be destroyed, regulatory measures should be instituted as to insure a water capable of serving the best interests of the people.

Strong water pollution abatement policy is needed. A community has various interests in its streams, ponds and lakes in addition to a possible source of drinking water. Industry needs clean water; bathing needs clean water; fisheries need clean water; navigation depends upon clean water and, odd as it may seem, industrial and domestic waste disposal need clean water to minimize their detrimental effects upon the stream. Either one, all, or part of the above usages may be deemed of primary importance in evaluating the needs of the community within a specific drainage basin area. Water is either directly or indirectly related with our health, comfort, and economy. Preservation of our water quality is a basic necessity to life itself.

PROGRESS MADE TO DATE IN FLUORIDATION OF PUBLIC WATER SUPPLIES

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Less than two years have elapsed since the American Dental Association, followed in close succession by other professional organizations, including the American Medical Association, adopted a resolution approving the fluoridation of public water supplies as an acceptable technique capable of reducing the high incidence of dental caries among children. The intervening months have witnessed similar action by the majority of state and local component societies including our own state Medical and Dental Associations, by state, county, and city boards of health, and by numerous civic, service and community groups throughout the country who are vitally interested in the dental welfare of children.

Physicians, dentists, nurses, teachers, and all other professional persons who have contact with children of preschool and school age are concerned for their dental welfare. They know from their own observations and from the numerous surveys made in the past several years that dental caries rank first among all physical defects found among school children. They also know that there is no hope that any more than a small percentage of this segment of the population will ever be able to receive the dental care which at least 95 per cent of all the children need. Their only hope is the newly discovered fluorides added to the public water supply or applied topically to the teeth of individual children at regularly stated intervals. Either method will result in a substantial reduction in the yearly incidence of dental caries, but for long-range planning, and this is necessary in a program involving millions of children, the first mentioned method is most acceptable. In the first place, it is known that the ultimate reduction in dental caries is greater, some 60 to 65 per cent decrease as compared with 40 to 50 per cent obtained with the topical application of sodium fluoride and that this protection can be made available to the masses of children at a much lower per capita cost. Finally, the fluoridation of public water supplies does not require the large number of professional personnel necessary for the topical application of fluoride. This a factor which must receive consideration since dentists and dental hygienists are alone certified to perform this service, and in either group they are far too few in number to render a service required by so many. A true sample of such a situation may be found here in Delaware where there are too few dentists to provide adequate dental service for the entire population, and there are not enough dental hygienists to supply either private offices or schools. With the exception of the City of Wilmington, there are no dental hygienists this year to work in the white schools of the state.

It is rather remarkable in view of the widespread approval stemming from so many outstanding professional groups as was mentioned earlier, that the progress of fluoridation up to this time has in the opinion of some authorities fallen short of that which was anticipated. However, interest does exist in all parts of the nation, as indicated by the number of communities now engaged in obtaining fluoridated water. According to the Council on Dental Health of the American Dental Association, "more than 300 communities in the Continental United States have fluoridated water and 269 communities have approved the measure for future adoption—outside the Continental United States limits too, this public health measure is gaining acceptance. The Panama Canal Zone water supply provides fluoridated water for all the Canal Zone as well as Colon and Panama City and its suburbs as far as Juan Diaz. In Alaska, the procedure has been approved for Anchorage. Kilmarnock, Scotland, will be the first British city to fluoridate its water supply."[1] While this information is encouraging, it must be noted that there are in all, 16,000 communities in the United States for which fluoridation could be made available. At the present rate of progress, it is estimated that some forty to fifty years must elapse before benefit to all the children can be assured when the task could and should be completed in less than five.

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Although Delaware was one of the first states in this section of the country to accept topical application of fluoride and Newark one of the first cities in the United States to approve fluoridation of its public water supply, progress here has been less notable than that in neighboring states. To mention but a few, Maryland now has 60 communities with fluoridated water, including the city of Baltimore; Pennsylvania has five with several approved including Philadelphia; while New Jersey, according to reports received in July, has 20 communities in one county where fluoridation is now in operation. The District of Columbia started fluoridation this past June.

The reason or reasons why the people of this state have not participated actively in a program which holds so much promise for the improved dental status of their children may spring from conservatism and their unwillingness to attempt anything so new. On the other hand, there may be local problems as in Dover where the Junior Chamber of Commerce has been working for fluoridation since 1951. Apparently, the situation there is rather unique since the water supply for the town is distributed from several rather than one central point. While the Junior Chamber of Comerce has purchased three fluoridation units for wells now in use, the City Council is faced with the problem of how to obtain two more units for wells to be dug in the near future, as well as suitable housing for all five units. Up to this time and no doubt for the above reasons, the present town council has not approved fluoridation for Dover.

It is quite possible that problems of this or a similar nature have arisen in Wilmington for which fluoridation was recommended last spring by the New Castle County Medical Society, and in New Castle, Claymont, Smyrna, Milford, and other communities where the sponsors were interested local groups or individuals. In smaller communities, however, the inability of local officials to meet the requirements of the State Board of Health for properly trained personnel to be responsible for feeding the fluoride compound and do the routine testing of the water will no doubt create a problem.

But difficulties of this kind are normal and to be expected. Also they can and will be overcome in time. The same, however, is not true of the propaganda being issued by bitter opponents of fluoridation whose literature and adverse publicity of one kind or another is rapidly finding its way into the hands of key persons in communities everywhere—even Delaware. It is to be hoped that the people here are too sensible to allow themselves to be influenced in such matters, but it has happened in other states and could happen here. Physicians are not unaware of the existence of such opposition, their own profession having found a parallel in those persons who have for years opposed vaccination. In medical history, too, there is reference made to those groups and individuals who "complained that chlorination increased gastrointestinal diseases, caused cancer and other systemic illnesses and 'dezincification of hot water heaters'."[2]

Whether it be vaccination, chlorination, fluoridation or something else to promote public health and welfare, the need for unified effort to combat opposing forces is always present, and physicians in their busy lives carry a large part of the burden since it is to them that their patients go eventually for counsel and guidance. The present issue—fluoridation—is no exception and in cities throughout the nation physicians are working shoulder to shoulder with dentists and other professional groups in an attempt to discourage public acceptance of any and all such fallacious literature. A recent report of the AD HOC Committee of the National Research Committee of the National Research Council, Division of Medical Sciences, offers substantial evidence favoring the fluoridation of public water supplies and should be of interest to such groups. Quoting from the conclusion to their study: "In view of these considerations, your Committee recommends that any community which includes a child population of sufficient size, and which obtains its water supply from sources which are free from or are extremely low in fluorides, should consider the practicability and economic feasibility of adjusting the concentration to optimal levels. The adjustment should be in accord with climatic factors and a constant chemical control should be maintained. With proper safeguards, this procedure appears to be harmless. However, it should be conducted under expert dental and engineering supervision by the State Board of Health. It should not be undertaken unless this can be provided. How much reduction in the prevalence of caries will actually be realized in any community will vary according to local conditions. The procedure will supplement but not supplant other dental health measures. About one half of the population of this country is living in small villages and rural areas and will not benefit by fluoridation of public water supplies. Other provisions for preventing dental caries in this fraction of the population should be continued and developed."[3]

Much of Delaware, as we know, falls into the last mentioned category, since approximately one third of our child population comes from rural areas or small villages for which fluoridated water cannot be made available. However, topical application of fluoride could be made available for such children at three-year intervals in a program such as the State Board of Health through its Division of Oral Hygiene has conducted during the past three years. This would require a substantial increase in personnel when available but it would give all children the benefit of either one of the two protective measures and assure a future when their dental health would be vastly better than it is today.

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THE PROBLEM OF CONGENITAL SYPHILIS IN DELAWARE

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When attention recently was focused upon the seemingly static incidence of congenital syphilis, and when this type of infection was cited as a major problem, most venereal disease control officers felt that this was contrary to their experience and that some portion of the statistics was probably subject to false interpretation. For that reason, an effort was made to study the situation in the state of Delaware. The study was conducted along two lines, a survey of all cases currently under observation being coupled with an attempt to discover new cases.

The search for new cases embraced an intensified effort to secure blood-testing of potential cases. This extended first to all children born of mothers known to have had syphilis at or before the time of the pregnancy that resulted in their birth, regardless of what antiluetic treatment the mother may have received. Testing of siblings of cases suspected of having congenital syphilis was also especially sought. Physicians conducting child health conferences or examining preschool and school children were instructed to be on the lookout for stigmata of congenital syphilis, and dental hygienists and dental internes were asked to look especially for dental abnormalities which conceivably result from heredo-lues. These measures were in addition to the already established program of testing in certain schools, and of testing infants born of mothers treated for syphilis during pregnancy. To facilitate this collection of blood specimens from children, some were drawn in well-child conferences when circumstances made it inconvenient or impossible for the child to attend a regular venereal disease clinic. In some instances, the health officer went into the home and obtained blood where there were several children who could not get into clinic, and a few specimens were taken at the time of regular school examinations.

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When a preliminary report of this study was made at a regional Venereal Disease Control Conference conducted by the United States Public Health Service in New York City on May 21, 1951, it was stated categorically that the increased emphasis upon testing of infants and children did not seem productive in discovering new cases. However, suspicious molars noticed by a dental hygienist led to the discovery of five infected siblings shortly after the period included in the report, and makes one reconsider the value of such a program. The project might have been much more extensive and conceivably therefore more productive if there were not the requirement of large volumes of blood for adequate testing. Physicians and parents alike abhor venipuncture; many more mothers would permit heel puncture or similar procedure, while the suggestion of jugular puncture brings instant rebellion and it is the practical truth that many well-child clinics are conducted in one or two rooms where privacy for such procedures is not obtainable. Many physicians who wanted to cooperate were rebuffed by the inability to withdraw enough blood, while others were reluctant to make an attempt and shied off with some excuse even after the public health nurse had referred a child to them for that specific purpose. The Filter Paper Microscopic or similar test could become very helpful in such cases if made more sensitive, even though it might continue to lack specificity. Our own laboratory is being urged to adopt some type of exclusion test which requires less blood as well as quantitative tests which are reliable when the volume of blood is small.

The case survey included a review of all cases of congenital syphilis seen in the clinics of the Delaware State Board of Health during the years 1949 and 1950, regardless of the time the diagnosis was first made. Insofar as possible the review extended also to all cases reported under surveillance for congenital syphilis by hospitals and private physicians during those same years. This review was aided by a questionnaire seeking a brief history of the case, the date of diagnosis, the basis of discovery and the history of any treatment received by the mother prior to birth of the infected child.

One hundred and eleven cases of congenital syphilis received attention in the clinics during the period. Of these, twenty-six were detected for the first time; nine others were admitted who had received previous attention in other states; and the diagnosis was established in five of our own cases who had been known for some time and received treatment for what had been considered to be acquired infections. As noted in Table 1, only six of the new cases were under one ~~year of~~ age, and just one other in the group was under one year of age when first placed under treatment. More significantly the great majority of these patients were adolescents and adults whose disease stemmed from inadequate control measures of a previous era.

Records do not reveal in every instance what instigated the recent clinic visit; but as shown in Table II, a known case returned in twenty-two instances because she herself was pregnant, and twelve were brought back by examinations for employment or food-handling. Others sought examination for marriage, as a routine procedure, as registrants for Selective Service and as contacts of other venereal disease patients. Eight complained of skin eruptions or genital discharges which they believed to be of venereal origin. Some already treated for syphilis were found to have congenital infection as a result of critical re-evaluation for failure to make the expected response to treatment.

The clear implication is that the techniques employed to discover new cases of syphilis are also effective in disclosing late congenital infections. Furthermore, these cases are subject to repeated rediscovery as so frequently they are seroresistant by reason of having carried their disease for a long time and because of sporadic, interrupted and inadequate treatment in the past.

TABLE I

Age Distribution of One Hundred and Eleven Cases of Congenital Syphilis Observed During 1949 and 1950

Age Group	New Patients	Old Patients At Original Visit	Old Patients At First Return During Period
Under 1 Year	6	1	
1 To 2 Years	2	1	1
2 To 6 Years	2	7	1
6 To 14 Years	3	24	9
14 To 21 Years	8	25	26
21 And Over	14	18	39
Total	35	76	76

TABLE II

Factors Responsible For Clinic Visits of Patients Infected With Congenital Syphilis Under Observation During 1949 and 1950

Factor	Route of Discovery of New Patients	Route of Discovery of Old Patients	Reasons For Return of Old Patients
Familial Contact	8	24	
Contact Other VD	2		3
Investigation Of Symptoms	5	4	8
School Examination	4	6	3
Pre-Employment And Foodhandlers' Exam.	4	16	12
Premarital Exam.			5
Prenatal Exam.	1	8	22
Selective Service Examination	5	2	6
Post-Treatment Observation			18
Referral From Elsewhere	5	12	3
Other And Unknown	1	4	
Total	35	76	80

It is surprising that even in a small state like Delaware, there is so much duplication of effort. One case of interstitial keratitis was handled by four separate entities, three of whom had made the report of a new case; this child of a migrant family had received treatment in two states before coming to our attention and moved on to still another state where further care was necessary. Multiple reports of the same case obviously distort the picture as to the true incidence of congenital syphilis, while lack of proper coordination occasions reduplicated and unwarranted treatment. The attempt to maintain a register of these patients is especially difficult as so many are in early adult life and continually changing their addresses and occupations and indeed their names.

Cases reported as congenital spyhilis by private physicians and by hospitals do not lend themselves to satisfactory analysis because the diagnosis is often reached without adequate consideration. Fortunately a great number of these reported cases were subjected to further extensive observation which enables us to point out some cause of confusion. More than a dozen infants treated for syphilis had to be eliminated for lack of conclusive evidence of their being infected. Most of these were delivered of mothers whose serologic tests were positive but who had received adequate treatment of which the reporter was unaware or disdainful. Often treatment of the infant was initiated on the basis of positive serologic tests of the cord blood regardless of what treatment the mother may have received. Two of these mothers themselves had completed treatment for congenital syphilis and two others had received two courses of penicillin during their prenatal period. Two infants with negative serologic tests were proclaimed to have clinical signs of syphilis, the description of which is not convincing and in all probability attributable to simple infections which also respond to penicillin. Treatment of all of these cases negated the value of subsequent serologic tests which remained negative or promptly declined to negative. Another group of patients reported by private physicians were adults, usually female, reported speculatively as congenital. None of them bore stigmata, while in several instances there was corroborative evidence to indicate the infections to be acquired. The propensity of some physicians to declare a latent case congenital is probably balanced by the more common tendency to fail to recognize congenital infections in the adult.

Although the number of infected children is small, there is much to be learned from analysis of their cases, and one could scarcely find a more potent argument for vigilant supervision of the pregnant woman, whether syphilitic or not. The record is not one to generate pride even if it is not easy to place the blame. Three of these mothers had no prenatal supervision and were not aware of their infection until they had syphilitic babies. One mother had received treatment for a brief period several years before the birth of her child but had been lost from observation. Another seen early in pregnancy received weekly injections of bismuth, and another also discovered in time received only eight injections of mapharsen prior to delivery. Still another was referred for treatment with penicillin but received only two injections before she hid away to escape some legal difficulties. A mother who had negative serologic tests at the fifth month of pregnancy, delivered a child found to be syphilitic at two months of age, at which time the serologic tests of both parents were positive in high titer. Two mothers who had received courses of penicillin prior to pregnancy subsequently bore syphilitic children, but neither had reported for observation of the response of her infection to treatment and neither had prenatal serologic testing.

In only one instance was there failure of penicillin to protect the infant when administered prenatally, and that instance will always remain open to question as the course given during pregnancy was the second received by that mother and had been administered although her Kahn titer was low; the case is included solely because the infant died at four months of age of a debilitating illness which was reported as syphilis "on clinical grounds".

There is always the temptation to censure the patient for failing to seek prenatal care or to chide the midwife for accepting a patient who has had no prenatal examination, but responsibility is not relieved that easily. One mother had gone through prenatal care and delivery by a private physician and again three years later by a hospital clinic without ever having a serologic test for syphilis. A positive cord blood at the second delivery led to discovery of infection in the mother and the first child, while the second subsequently was proven to have escaped infection. An English war bride had one baby in England and another in a neighboring state, but was not discovered to have syphilis (congenital) until her third pregnancy. So we find that while we advocate repeated serologic testing of the pregnant women, we must constantly proclaim the fundamentals, as entirely too many women are being delivered without ever being tested.

It seems incredible that a disease for which we can do so much, should continue to pose problems, but it appears that as long as syphilis is endemic, it will remain a threat to the welfare of unborn children. Yet we cannot let our zeal to eliminate congenital syphilis push the pendulum too far in the direction of treating more babies, as too many now receive treatment on suspicion. While we condone treatment where the disease is likely to be present and there is doubt that adequate observation can be extended, we also feel that the decision should be made only after serious consideration. Penicillin prophylactically may be innocuous but possession of a powerful weapon cannot substitute for good clinical judgement, and there are many implications and responsibilities which cannot be avoided by the mere exhibition of treatment.

To clear up the backlog of congenital syphilis is a tremendous task, but every case that develops henceforth must be regarded as a disgrace and a reflection of our collective failure, for it is our responsibility to search unceasingly for every victim of syphilis and erect barriers against its spread until our whole population is rid of the disease.

Summary And Conclusion

1. The static incidence of reported cases of congenital syphilis does not reflect failure of our present recommended treatment for the pregnant woman with syphilis.
2. There is definite evidence that the picture would improve if we were to use our best knowledge and facilities.
3. As long as syphilis is endemic it is a hazard to the unborn child.
4. Repeating the serologic test in late pregnancy is a desirable practice.
5. Intensive search for new cases of congenital syphilis in children has been relatively unproductive.
6. The techniques already employed to find unknown cases of syphilis also disclose an appreciable number of late congenital infections.
7. Most reported new cases are adults who are already aware of their disease.

8. Diagnosis of syphilis in infants presents problems that require much consideration and effort.

9. Many uninfected infants needlessly are treated for syphilis.

10. We must continue to try to furnish the physician the means to handle the congenital syphilis problems more satisfactorily.

THE DELAWARE CLEFT PALATE PROGRAM*

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When Dr. Ivy invited members of the staff of the Delaware Cleft Palate Clinic to participate in this cleft palate conference, he suggested we emphasize organization and the group diagnostic method of handling the problem. We shall attempt to follow through on his suggestion.

The Delaware cleft palate clinic is in its infancy—it first started operating this past September. However, some services to the cleft lip and cleft palate child had been in operation years previous to this—namely, plastic surgery and speech therapy. The cleft palate diagnostic clinic developed as a result of the orthodontists' interest in developing an orthodontic program for dental malocclusions. They approached the State Board of Health with that suggestion. An orthodontic program was outlined leaning heavily on the plans originated by other states, mainly New York and Pennsylvania.

In developing the plan, after discussion pro and con, it was decided to initially limit the orthodontic program to cleft palate children, although the plan permits acceptance of a much wider range of handicapping malocclusions. The reasons for reaching this decision were (1) that cleft palate and cleft lip cases were already accepted by the Crippled Children's Services for plastic surgery, speech therapy, and related medical social and public health nursing services, (2) the number of cases of dental malocclusions that could be treated was limited both by the amount of orthodontic services obtainable and the budget available, (3) it was recognized that the cleft palate child requires many varied services and therefore is the type of case that demands a coordinated treatment program.

In writing the orthodontic plan, provision was made for furnishing pedodontic services and speech appliances as indicated. The orthodontic treatments are conducted at the offices of the orthodontists participating in the program. The children are referred back to their family dentists for pedodontic services, the Division of Crippled Children subsidizing the cost of dental treatment when such financial assistance is indicated. If there is no family dentist they are referred to a dentist selected by the Division.

Having reached the decision to give cleft palate children primary consideration in the provision of orthodontic services and recognizing that proper handling of the cleft palate child necessitates a team approach and integration of the various specialized services, a conference was called on July 17, 1951, in which the interested orthodontists, the medical director of the duPont Institute, the consultant in plastic surgery of that institution, the Director and the Coordinator of Speech and Hearing Services of the Division of Crippled Children's Services, all participated. At this conference it was decided to hold clinic sessions at which diagnostic surveys would be conducted on cleft palate children. The following were to attend the cleft palate sessions to be held monthly: the consultant in plastic surgery to the Alfred I. duPont Institute, one or more of the three participating orthodontists, and the following staff from the State Board of Health—the Director of the Division of Crippled Children's Services, who would also act as pediatricain in the clinic, the Coordinator of Speech and Hearing Services or another of the speech therapists of the Division, a medical social consultant from the Division, and a public health nurse from the New Castle County Health Unit. Doctor A. R. Shands, Jr., Medical Director, Alfred I. duPont Institute, very kindly offered the use of the physical facilities of the Institute for the holding of this clinic.

I should now like to briefly describe how the clinic operates. We first started scheduling three children for each clinic session, but soon dropped the number to two. The cases to be seen are selected from those already receiving services from the Division of Crippled Children's Services, and those referred to the Division for this clinic. Referrals to the clinic also come from the Alfred I. duPont Institute, which provides plastic surgery for many of the cleft palate children in the state. Our procedure is as follows: The public health nurse routes the patient and parents through the clinic. During this procedure she often picks up pertinent information which she can later transmit to the group. The medical social worker in her interview with the parents determines their economic status, uncovers and evaluates social problems and prepares the parents to ask questions they desire answered. The public health nurse substitutes in this capacity whenever the medical social worker is absent. Following this interview, the patient is examined and evaluated separately by the pediatrician, speech therapist, orthodontist and plastic surgeon. The clinic members then meet in a group conference, discuss their findings, and arrive at a joint decision on recommendations to be followed in the treatment of the case. Priorities and the sequence of treatment are established. The parent is then called in and advised by a member of the group of the clinic recommendations—their reactions toward the acceptance of these recommendations is ascertained. Economic eligibility comes into play with the provision of treatment services but is not a factor in the provision of the over-all diagnostic survey.

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**Director, Maternal and Child Health and Crippled Children's Services, Delaware State Board of Health.

A report on the various findings, the clinic conference and clinic recommendations is then dictated and typed in a number of copies. The Division of Crippled Children's Services assumes the responsibility of arranging for the carrying out of the various recommendations on the financially eligible group. Auxiliary services are called upon, such as the mental hygiene clinic for psychometric and psychological evaluations, the speech and hearing program of the Division of Crippled Children's Services for audiological and otological problems. A complete record is kept on file at the office of the Division of Crippled Children's Services. The clinic report and pertinent information are distributed to the Alfred I. duPont Institute, the appropriate county health unit, and to the various individuals who will be participating in the treatment of the child.

I believe we have the advantage in Delaware of operating in a small state with a relatively small population of somewhat over 325,000. This leads to a closer relationship between the clinical and administrative aspects of the program, which is an advantage in promoting a smoothly operating program. However, despite the fact that Delaware is small, it has a long north-south dimension. The only large city, Wilmington, is located in the extreme northern part of the state, close to the Pennsylvania line. Almost all of the resources are located here. This means that we are still faced with the problem of getting children to clinic from a distance of 100 or so miles in some cases. It also means that if orthodontic treatment is initiated these children must travel long distances to get to the orthodontist's office. Therefore, before initiating any treatment program, we must take into careful consideration whether the child can get to the services and whether the family have enough interest to get there regularly.

In concluding my portion of the description of the Delaware program, I should like to state that in the few months we have been operating we feel that we have been progressing satisfactorily, and we feel that this type of clinic service offers advantages that would be most difficult to obtain in any other manner.

THE ROLE OF THE SPEECH THERAPIST IN THE CLEFT PALATE CLINIC

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Almost anyone can now identify the philosophy which denotes that we are interested in helping children learn to walk so that they can go up and ask for a job, but we do not do much about the person who can walk up to get a job but can not ask for it once he is there. The enthusiasm and sincerity with which Dr. Herbert K. Cooper of Lancaster,

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**Coordinator of Speech and Hearings Services, Delaware State Board of Health.

Pennsylvania, launched his clinic for the total rehabilitation of the cleft palate child has gained the admiration of the nation.

In March of 1948 Dr. Cooper spoke at an Institute planned for the staff of the Delaware State Board of Health and other interested persons. It would not be difficult to believe that our present program in Delaware began in many minds on that day. Later that year the Director of Crippled Children's Services, an orthodontist in the state and the speech therapist spent a day observing Dr. Cooper's clinic in operation.

In August of last year two days were spent in observing the work of the Speech Clinic at Pennsylvania State College and conferring with Dr. Eugene McDonald who directs that clinic. We were, by that time, organizing our own program and Dr. McDonald's extensive experience in the field of speech in this particular area was invaluable.

The effect upon speech of any oral deformity will depend upon the severity of the deformity and upon the ability of other articulatory organs to compensate either after surgical and orthodontic restoration or without it (when it is not deemed feasible). There are three deformities to be considered: cleft lip, dental malformations and cleft palate or there may be a combination of these. Frequently the lip is not involved. If it is involved and has been repaired, the clinician sometimes encounters cicatrized tissue that lacks mobility. This will affect all sounds which are made by the lips (p,b,m). There can be no clear-cut explosion of "p" or "b" and there may be leakage of air on "m".

The malformations of the teeth may or may not affect the speech. It is well known that the tongue compensates in an astonishing manner in many persons who have severe dental malocclusions and the speech, as a result, is acceptable. The relationship of the speech therapist to the orthodontist in this team is that of one who advises in deciding whether or not an orthodontic problem is the cause of the speech deviation. The orthodontist decides whether treatment is wise and is feasible.

When surgery has been performed, the speech therapist is interested in knowing which muscles were involved and the condition of the pharyngeal and palatal musculature post-operatively. A sufficiently long and mobile palate is desirable for adequate speech. Sometimes this cannot be obtained surgically and a speech appliance provides a more efficient closure of the palate. The speech therapist again advises the surgeon on the acceptability of the physical structure for speech. The surgeon determines the feasibility and prognosis of operative procedures.

In cleft palate speech all the sounds of speech are distorted to some degree. The most general description would indicate that there is nasalization of all vowels and vowel-like sounds and some distortion of the nasal sounds. There has been research to indicate that we have placed too much emphasis on nasality and that we should give more attention to the articulatory problems.

In the clinic we try to understand the structure we are dealing with so that we may plan adequate speech therapy. We are looking for answers to several pertinent questions:

1. Is the patient able to close the nasal port and thus prevent so much of his speech from sounding nasal?
2. Is his palate long enough to assist in proper closure of the nasal port and in adequate production of velar sounds?
3. Is the structure adequate for good speech (or better than the patient now has) with or without an appliance?

In evaluating the speech involvements and speech possibilities:

1. What does an articulation test reveal?
2. Is there a difference between production of isolated sounds and connected speech?
3. What does a routine audiometric test reveal about his hearing?
4. What is causing the nasality?
5. What can he do with the musculature that he has?
6. What about his breathing pattern? Sustained exhalation?
7. If he has an appliance, is it acceptable for speech?
8. If he does not have an appliance, does he need one?
9. What is his attitude toward his speech? (If he is aware of it).

If there is indication of a significant impairment in hearing, the patient is referred to the Delaware Hospital Audiology and Speech Center where he receives an examination by an otologist and a complete audiological evaluation.

If the attitude toward his speech is a major factor, he is referred to a competent psychologist at the State Mental Hygiene Clinic. This evaluation, as well as the hearing appraisal, gives additional assistance to those working with him and particularly to the speech therapist.

If speech therapy is recommended, the therapist sets two major objectives:

1. To obtain optimum control and use of the palatal and pharyngeal muscles.
2. To attain maximum intelligibility and pleasantness of speech in order to make him a useful and happy citizen. The therapist follows standard techniques for this therapy and any other method which she can devise which is found to be successful.

You know the feeling of helplessness when you tried recently to make a long distance telephone call and the communication lines were silent. The communication lines are down most of the time to an unrehabilitated person with a cleft palate. We believe that we have begun the process of restoration in Delaware and we are glad that speech therapy is included in the program of total rehabilitation. With Dr. Cooper, we want to be sure that the person with a cleft palate can ask for a job once he reaches the employer's desk.

THE ADVANTAGES TO THE ORTHODONTIST OF THE GROUP APPROACH IN TREATMENT OF THE CLEFT PALATE PATIENT*

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In this day of specialization, everybody is an expert in his field. But how can one individual be an expert in every field? This is the problem that faces an orthodontist in planning treatment for a cleft palate patient.

The primary interest of an orthodontist is the prevention and correction of malocclusions of the teeth. Obviously, the aims of the plastic surgeon or the speech therapist are quite differently directed. Yet it is becoming more and more apparent that the aims and abilities of all of these experts must be focused on the cleft palate patient and coordinated to bring about the most successful result in treatment.

With a great many of the youngsters with cleft palate, the permanent teeth, upon eruption, present a greater or lesser degree of malocclusion. In past years, when such a patient was presented to an orthodontist for treatment, the teeth were badly jumbled, the palate had been operated from one to four times with varying degree of success, and the speech was far from acceptable. In order to develop a proper plan of treatment for the case, it was necessary to obtain the advice and recommendations from our allied fields of surgery, speech, psychology, medicine, etc., and etc. It would be appropriate to make note at this point that in Delaware we have no large medical centers where all of the many services might be readily available for consultation. In order to obtain such information, it was necessary to arrange for an appointment with the private office or public agency where each individual service might be obtained. This was not only a time consuming, but very often a costly and discouraging procedure. Assuming that all of this information was eventually assembled and evaluated, it was often necessary during the course of orthodontic procedures to obtain further consultation and advice from these allied fields. Under the best of circumstances, it was occasionally necessary for the orthodontist to assume responsibilities outside of his field.

After heaping all of these problems on top of the many difficulties encountered in orthodontic treatment of the malocclusion of the cleft palate, it is no wonder that many orthodontists held a dim view of the prognosis in treatment of these cases. Yet the cleft palate is essentially an oral problem, and since dentistry and the special field of orthodontics is primarily concerned with oral problems, a solution to this situation had to be developed.

In the realization of the problems, and in view of the fact that all of the necessary expert personnel were available, although in small numbers, in Delaware, it was only necessary that they be assembled. This would not only facilitate the proper evaluation of the individual cleft palate case, but would serve a mutual benefit. And so it has functioned with our group.

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**Participating Orthodontist in the Cleft Palate Program.

In the planning of orthodontic treatment for one of these patients, it is most encouraging to know from the beginning where the dental aspect fits into the over-all picture. From the speech therapist, we learn how much of the defective speech is due to the physical deformity, and the extent to which the presenting malocclusion is responsible for the defective speech. With this information, it is possible to work out a treatment approach that not only will correct the malocclusion but equally important will serve most to aid in speech improvement. Often the relocation of one or two of the teeth will be of considerable help to the speech therapist in producing some of the sounds. In the design and construction of a speech appliance, the suggestions of the speech therapist will in great measure aid in the successful function.

The plastic surgeon can offer an appraisal of the possibilities or limitations of further surgery. In some instances we find that perforations in the palate are more amenable to treatment by prosthesis than by surgery. On the other hand, it may be that the construction and use of a speech appliance would be more successful if a re-division of the palate was first accomplished. And in turn, such treatment can render tremendous help to the speech therapist. The surgeon's advice regarding the possibilities of surgical replacement of the mandible is invaluable in the cleft palate case with severe mandibular prognathism—a most difficult type of malocclusion to correct otherwise. It is so much more gratifying to be able to obtain this information at one complete session of personal contact and discusion than from many typewritten pages of a formal case history.

The psychological appraisal of the youngster's ability to cooperate with the many demands of complex and lengthy orthodontic treatment combined with the findings of the medical social worker can very readily serve to influence the approach to treatment. It is quite possible that on the basis of these findings, it would be far more advisable to limit the extent of orthodontic treatment and consider the possibility of the construction and placement of prosthetic appliances. In either event, it is possible to feel far more secure in the treatment plan as eventually developed and carried out.

After sufficient time has elapsed for corrective efforts to be carried out, it will be most comforting to be able to return to the group with a given case for further evaluation. It is not conceivable that in every instance each treatment plan will proceed smoothly to completion. Herein will be a service of inestimable value, not only for the patient, but for the orthodontist as well.

Thus far in our efforts it has proved an enlightening experience to realize how much each of our professional services has to offer to the other. We will continue to gain in knowledge of our own field and in that of our related fields to the ultimate benefit of our patients.

WILL THE CHILD OUTGROW HIS SPEECH PROBLEM?

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Speech itself is not something that comes to us automatically, although most of us tend to regard speech as a function that will develop by itself if given enough time. To a certain extent, because of the natural way in which speech develops, this is true, but it is certain that none of us would have speech today if it were not for a wide range of outside factors acting directly upon us to influence our total maturation both in a physical and a non-physical sense. In reality man has learned to use for speech, organs that were evolutionally intended for more basic functions. It is because of this "borrowing" of organs that we refer to speech as an overlaid function. However, since most of us have been subjected to similar environmental and developmental factors we have been able to set up a schedule or scale for development of speech as it should occur in the average or so-called normal individual.

Dr. Charles Van Riper[2] has outlined the development of speech in the following manner. During the first month after birth we can expect the child to vocalize to the extent that we can hear certain vowel sounds produced along with the crying of the infant. By the end of the third month the child has added more vowel sounds and a limited number of consonant sounds. During this period there is usually more non-crying vocalization and the crying vocalization begins to be differentiated according to the type of discomfort such as pain, hunger, etc. In some children repetitive chains of sounds will appear during this period. By the end of the sixth month we would expect to find a rhythmical babbling and more non-crying sounds than at three months. At the end of the ninth month the child has begun to cry and yell to get attention, there is more pitch variation in the sounds produced, and in some instances the child will repeat sounds given to him by the parent but he does this as a form of babbling rather than as a response to adult stimulation. During the period from the tenth through the twelfth month the child will make an effort to imitate a number of sounds and syllables that he hears in the speech of his parents. Sometimes the child will repeat a word if the parent introduces it into the child's vocal play. These words, however, will usually not be retained in the child's vocabulary but rather they are a form of echo play in which the child indulges at this time. By the end of the twelfth month we can expect some children to have developed their first true words, and by the end of the eighteenth month the child should have a vocabulary of from ten to twenty meaningful words. These words may have sounds or syllables missing, but to the child and parents they have meaning. During this period the child's speech, with the exception of these few words, consists mainly of jargon but jargon at this period differs from earlier vocalizations in that it has emotional content and it is also the child's attempt at imitating the fluency of his elders. Usually by the time the child has reached his second birthday he should be talking. His speech at this period usually consists of phrases or short three and four word sentences like: "Want milk." "Cookie all gone." "Kiss mama." The articulation at this point is most always faulty and there seems to be little voice control. From the age of two the child's speech begins to develop at a more rapid rate until the age of five or six when we expect the child to have completed his speech development.

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Sometimes, however, during this critical period in the child's development something may go wrong. Any number of factors may come into play which could have a direct effect on the child's speech. Often times these factors operate to produce a fault in articulation. The child who develops this difficulty does not produce all of the speech sounds in the accepted manner. Because of this his speech tends to call attention to itself and in some cases can be quite difficult to understand. While these disorders may take many forms, Dr. Wendell Johnson[1] and other authorities prefer to group them into the following three classifications: (1) substitutions, (2) omissions, and (3) distortions.

Substitution errors are commonly found in small children and a typical example of this might be the child who says, "Wabbits eat cawots." This child is of course substituting the *w* for the *r* sound.

Errors of omission are also common to small children. Often the child will omit the final consonant sound or when two consonants are blended together in the middle of a word such as the *s* and *t* in stop, one of the two may be omitted.

The errors of distortion are usually considered to be the most common or frequently found. Often children have great difficulty in making a good *s* sound. The *s* may hiss too much or in the production of the *s* a so-called "lisp" may appear.

All of these types can be related to either a functional or an organic basis. Whatever the cause it is certain that disorders of articulation make up the greatest percentage of speech cases seen by speech therapists. Figures provided by the Mid-Century White House Conference on Children and Youth[3] show the following: Of the assumed total population of children from between the ages of five and twenty-one years (40,000,000), 1,200,000 or 3.0% will have an articulatory problem. Five percent of the total age range population can be expected to have a speech fault of one form or another, so when we consider the fact that 3.0% of this total is involved with an articulation problem it is not hard to understand the great need for attention that these particular anomalies require.

It is not only because these cases are in the majority that the speech therapist is anxious to begin work at an early age, but for other factors which are equally if not more important. Because this problem is seen so frequently, the common belief seems to be that if it is forgotten the child will in time outgrow his difficulty. *While this may be true in some fortunate cases, it is not the general pattern.* During the period from three to six the child is rapidly learning new words, ideas, situations. He is in a hurry to express his thoughts and yet he does not have the vocabulary to make an adequate showing. As a result frustration may occur with the speaking situation. Incorrect sounds are developed and reinforced. The child's desire to imitate the speech, both in inflection and vocabulary choice, of his parents is often so great that other more serious speech problems may develop. Dr. Van Riper[2] has said that children definitely *learn* to talk. "Their parents do the teaching, and it is usually very poor. Because of the widespread ignorance concerning speech development and the teaching of talking, many children: (1) fail to practice their speech sounds in vocal play; (2) do not learn how to imitate sounds; (3) do not learn that sounds can be meaningful and useful tools; (4) do not practice or profit from their jargon; (5) resort to gesture and other substitute behavior rather than develop a growing vocabulary, and therefore they (6) lay the foundation for defective speech."

Since the speech therapists with the State Board of Health are concerned with the preschool child, our work in the area of articulation must of necessity be along the lines of prevention of speech problems. If a child at the age of three or four has a speech fault, it is important that work along the preventive lines begin as soon as possible. Speech therapy with children at this age level does not consist of speech exercises, word lists and drills but instead is an indirect approach to speech hygiene, accomplished through play and story periods with the therapist. *If the child is left to his own devices, there can be no guarantee that time will cure the problem.* Speech therapy then in *all* cases must be on a cooperative basis between the therapist and the parent. The speech therapists with the State Board of Health devote time to both the child and the parent whenever possible. Suggestions for home therapy and a discussion of present clinic work is usually included in this period.

Any physician can refer a pre-school aged child for a diagnostic speech interview by mailing one of the referral forms available through the Division of Crippled Children's Services, Delaware State Board of Health, Dover, Delaware. Thus with the close cooperation of the physicians throughout the state in making referrals for any type of speech deviation to the speech therapists with the State Board of Health, it is hoped that a constructive program of speech help can be developed that will aid the children of Delaware.

Summary

1. A discussion of speech development as it might be expected to occur within the so called "normal" child is given.
2. A discussion of the problems that may appear in a child's speech with a description of the three major types of articulation errors found is presented.
3. The importance of early speech training and speech hygiene is emphasized with a brief description of the methods used by the speech therapists with the State Board of Health.

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UNDERSTANDING THE SICK CHILD

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A physican knows well that an illness may be a major event in anyone's life. In the case of a child it may or may not have a marked effect on his developing personality. What will be the effect of illness on the child? Will he return from the hospital with confidence in the adult world, which will give him assurance in meeting life's problems as they occur; or will he develop mistrust of adult motives and behavior, retain fears of doctors, hospitals, white gowns, and even strange situations in general? These questions should not be ignored. In many emergent situations there is no great choice of action. But, in general, a child can not be said to benefit when, in remedying a physical condition, we create new problems for him or intensify existing ones.

Responsibility is Everyone's

The responsibility for preparing the child to meet his illness lies with everyone—the parents, doctor, nurse, medical social worker, and therapist. The physician's responsibility in preparing a child for surgery does not begin when surgery is first contemplated but at the time of his first contact with the child and parents. Very important is this relationship with the child, but no less so, his guidance of the parent and child relationship. Anything he can do to aid this relationship is not only practice of good mental hygiene but time well spent which may lead to less hectic periods in the office with apprehensive children and exasperated mothers.

A child knows when a doctor is his friend, and a person who likes and wants to understand him. Even if a painful treatment must be done, he accepts the fact that the doctor will keep his word and hurt him only as much as necessary. Scolding him when he is frightened will only convince him the doctor does not like him. A word of praise for the manly way he bore the pain will mean much to the child and the trust he has in the doctor.

Child As An Individual

Many times we, and this includes the parents, lose sight of the fact that a child is an individual. From birth, he has his own way of showing emotion. This is what gives him personality. We need have respect for him and let his questions guide us in alleviating his concern. We have all been slow in recognizing the importance of dealing with the child directly. The adolescent child, especially, should be given an opportunity to be seen apart from his parents. Being allowed to talk in privacy helps the patient-doctor relationship. Too often it is left to the nurse, medical social worker, or someone else to communicate needed information which would come with more reassuring force from the doctor himself.

Hospital Care of the Sick Child

Doctor Harry Bakwin states that a young infant's emotional reaction to acute illness is minimal. However, in an illness requiring long-time hospital treatment, Doctor Bakwin thinks the effect may be overwhelming, may even result in death. He has found that an infant is unable to tolerate long periods of hospitalization; that long terms of hospitalization without individual physical stimulation may cause him to become pale, thin, and listless. He may have frequent stools or may develop an unexplained fever which may go on for months; he usually is quiet and does not babble spontaneously. Doctor Bakwin reports that if the baby is sent home, a remarkable change for the better often takes place in a few hours. The cause of the symptoms he considers to be emotional deprivation.[1] Mary E. Lewis has also given an apt description of the child in long-time temporary placement as one living in one place and loving in another;[2] this same description applies to the hospitalized child. Older children and adults react differently to hospitalization in that they can originate emotion within themselves by something interesting, or an exciting idea.

A number of other authorities, however, have expressed the opinion that while the newborn infant, premature infant, and severely defective child seems to thrive in hospitals, the older infant does not. In general, it is well to avoid keeping babies in hospitals longer than necessary. On a social basis we no longer use, by preference, fondling homes and large institutions but, when possible, provide care in the more normal foster home environment.

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Though the medical situation may make long-term hospitalization necessary, the experience can be made a constructive one, emotionally as well as physically. Nurses should regard themselves not only as nurses but as mother substitutes. Infants should be picked up, loved, patted and fondled. Parental visits instead of being limited should be encouraged. In some hospitals on the continent, and notably in England, the mother takes care of the child and does everything for him but provide the medical treatment. Doctor James Spence of New Castle-on-Tyne, where this method is used, states that the child gets better medical care because in the mother he has a full-time nurse interested in him. Also, the mother learns new skills and acquires a greater sense of responsibility. This method also relieves the nurse, an important consideration in these days of nursing shortages. Nurses, students, and interns too may learn a great deal about the child's management from the mother.[3] In some hospitals, babies and mothers are admitted together. There is an interesting clinic in New Zealand called the Bassam Clinic where this method is used. Mothers take care of everything except medications and surgical dressings. In Bellevue Hospital, New York City, nurses and interns welcome the mother on the infant wards. Doctors and interns are encouraged to pick up babies and carry them about on rounds. Babies are assigned to interns. Not only is this helpful to the infants, but interns sometimes benefit as well as the babies.

For the older child, too, there are certain advantages in home care. The child feels safe. He has a full-time nurse, his mother. Some parents are less anxious and their feeling of responsibility is enhanced. Parents get satisfaction out of having nursed a sick child. Also, home care is less expensive than hospital care, no matter who pays for it.

But when home care is not indicated and hospitalization is necessary, it is wise to maintain the same parental sense of responsibility. It is extremely important to foster the parent-child relationship. This may be done by having the doctor or some designated staff member available during visiting hours to discuss various steps of treatment with the parents as well as by drawing the parents into the activities in which the child participates. When relieved of much responsibility, parents may become apprehensive of losing their rightful place in the relationship, or when the feelings of attachment are not very strong, they may break. This is especially true in the case of an unwanted or crippled child. We frequently see such a child neglected or the parents may just have disappeared.

Understanding of People is Essential in Helping Them

Some understanding of the parents themselves is essential so that when a block to treatment occurs the cause may be ascertained, thereby making medical care more effective. The block may be based on fear—fear of surgery, fear that a child may grow worse, fear that he will never be economically independent, fear of what others in the social group may think. It could be due to ignorance, lack of knowledge, inadequacy, immaturity, and a number of other reasons. A child, too, has his fears even though he may not demonstrate them. We must help both the child and the parents by determining the cause of their resistance. If one parent can be won over to a course of action, he can usually be trusted to know the best way of persuading the other. A crippled child has a sense of being different. He can not run and play as other children; can not compete in games and sports. He may feel inadequate and develop a sense of guilt associated with thoughtlessly made parental reproaches. The world seems unfriendly and he tries to revolt. Some ill children show regressive tendencies; they become dependent, demand attention, and are more selfish. Companionship with other children, with the therapist, and the teacher mean much to such children in a long drawn out illness. They bring the world to the child, and he is less apt to feel lost and neglected. For children, the hardest thing to bear is being objects of pity either to adults or other children. As children grow older, they are concerned about the effect of their condition on the possibilities of future employment and in regard to marriage.

It is well for us to consider some of the problems children face. Though a child does not speak of them directly, we should be aware of their existence from the child's comments, questions, and actions and let these guide us in helping him. Once treatment has been decided upon by the doctor it is wise to explain it to the child and the parents. Surgery may be indicated. There may be immediate need or it may be of an elective nature. In the former, the child's distress or urgency of the situation usually commits all to immediate action. In the latter, however, there usually is ample time to consult with the parents as well as the child and allow them to come to a common decision. Sometimes a situation requires a great deal of interpretation and treatment. Past experience, half-told tales resulting in fears and apprehension, and financial situation all enter into the making of the decision.

We need to be understanding and helpful. Busy physicians sometimes find the process of arriving at a decision slow and time consuming. Some people can not bring themselves to ask questions. They must be helped. The physician's time is well spent if he patiently talks through the plan of treatment, the operation, and therapy thereafter. While a nurse or a medical social worker may be capable of doing the same, and frequently reiterates, the emphasis and best results come from the doctor's interpretation. We must also remember that in the absence of parents, foster parents should be given the same consideration.

Timing of the Operation

Great import is placed on the timing of non-emergency operations. We are told that, in general, an operation should not be considered when a child is going through a period of stress. The most common contra-indication on psychological grounds, which is often missed because a child does not show overt signs of emotional disturbances, is the period of three months before to six months after the birth of another child in the family. In general, the years from three to six are considered hazardous for hospitalization. Being away from home is one of the most disturbing elements. For many a child it is his first time away from his mother. He can be helped by accustoming him gradually to separation, using a baby sitter for increasing periods or permitting him to stay at a friend's house while mother goes shopping. This all builds up his confidence that though mother leaves him, she always comes back.

Prepare Child for Operation

By being matter of fact, neither frightening him nor misleading him, we can help the child greatly. Sometimes play acting about going to the hospital is very helpful. For the child there must be someone to bridge the gap between home and hospital—a familiar face when he goes to the operating room, has anesthesia, and later when he awakens—if not his mother—the family doctor, intern, nurse, or anesthetist who has made a special effort to become acquainted before the operation. A small child helped wisely may come out of the experience with increased confidence in coping with future problems in life. Illness tends to effect not only the individual's independence and self-respect, but his mode of living and even his emotional balance. If pressures become too great, he may not wish to recover or it may retard his convalescence.

Role of Medical Social Worker

In this article little has been said about the role of the medical social worker in relation to the sick child and his parents. She functions essentially as a caseworker in any setting—to help the person in trouble assess his situation, the problem, and the assets within himself and his environment in order that he may capitalize on his strengths and resources in moving toward maximum responsibility in his own behalf. Essential to the successful performance of this function is the caseworker's professional knowledge and experience, and ability to search for facts, analyze and make use of them in the service to the patient; ability to create with the patient a relationship in which he is helped to view, as he is able, the reality that confronts him. Also, it is essential to help him recognize and know the forces contributing to his difficulties and those strengths within himself, his family, and his community, including the hospital, which he may use to meet his situation or to change it.

The medical social worker gains information about the family, its strengths, and its needs on which a social diagnosis can be based. In the course of her study of the patient and his family, she is able to give them some help too, but what is important, also, she contributes her knowledge of the social needs to the physician and other professional personnel who might be involved so that they may take these facts into account when planning for the care of the patient and when carrying out the plan. In many cases, she will recognize needs in the family situation that can be met only through collaboration with outside agencies. Here she uses her knowledge of community resources to help the family.

We know that specific treatment for a twisted leg or sore joint is not enough. We realize how strongly the child's physical well-being is influenced by his feelings about his family, his school life, and his playmates. As we recognize more and more how closely the individual's physical, social and emotional needs are inter-related, we can see better how necessary is teamwork between members of the various professions who are trying to help the patient return to health.

Summary

Illness and surgery may leave a marked effect on a child's personality. We, as well as parents, often lose sight of the fact that a child is an individual. We must have respect for him and let him guide us in helping him by his questions, comments, and actions.

When there is long-term illness, it seems wiser to institute home care wherever possible for both younger and older children. If hospitalization is necessary, as many factors of home care as possible should be brought to the hospital situation including loving care from the doctor and hospital staff, especially one designated individual serving as a parent substitute, a role usually played by the nurse. There should be a tying-in of home and hospital, carrying parents along in each step of the treatment.

Timing of operations is important. Avoidance of periods of stress will help the child. In all dealings it is important to establish the child's trust in the doctor and medical team. In preparation for periods away from home, it is prudent to prepare both the child and parents in regard to treatment, operation, and convalescent care. Questions should always be answered honestly. Thus helped, many small children may come out of the experience with illness with increased confidence in coping with life's future problems.

The medical social worker helps the person in trouble assess his situation, his problem, and his assets in himself, family, and community; to capitalize on his strengths and thus help him face his situation or change it. All of us—the doctor, the nurse, the medical social worker, the therapist, and others—recognizing how strongly a child's well-being is inter-related with emotional and social needs, must be alert to our responsibility and in helping the child.

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CO-OPERATION BETWEEN PUBLIC HEALTH PERSONNEL AND SCHOOL NURSES

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During this year the Delaware State Board of Education appointed the Director of the Division of Public Health Nursing of the Delaware State Board of Health to the position of Co-ordinator of School Nurses in the employ of the State Department of Public Instruction. This appointment is without remuneration but it affords an opportunity for promoting even closer work relationship between school nurses and the nursing service of the County Health Units of the State Board of Health.

Services available to school nurses through this appointment include the following:

On State Level: The Public Health Nursing Director and the public health nursing supervisory staff are available to give consultant service on school nursing and program planning, policies, procedures, etc.—on a request basis—to State Department of Public Instruction personnel. She is also available—on a request basis—for planning and arranging of inservice school nursing institutes in Dover for school nurses.

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On Local Level: School nursing consultant services are available to school principals and school nurses—on a request basis—by qualified generalized public health nursing supervisors of county health units (professional qualifications—specified in Delaware Merit System for State employees). School nurses are invited to attend the inservice school nursing educational meetings in county health units. Content of the programs for the meetings would include use of the county health unit personnel and special consultants on the State Board of Health staff, i.e., Maternal and Child Health, Tuberculosis, Social Service, Nutrition, etc. Purpose of these meetings is to acquaint the school nurse with available health resources in her territory and to promote closer work relationship between school health workers and the personnel of the county health units.

Principals and school nurses of all of the schools have been visited by the Public Health Nursing Director and the Nursing Supervisors of the County Health Units to interpret the service to them and to offer assistance in planning details of the school nursing coordination program according to the expressed needs of the school health personnel.

The State Board of Health continued its program to provide health services to school and preschool children. Public health nurses on the staff of the county health units participated in the control of communicable disease by making home visits to teach and demonstrate nursing care and for making epidemiological investigations. They also visited the schools to assist with the immunizations and the physical examinations of school and preschool children.

The school nurses have contributed to the general health services of the communities in which they are employed by working cooperatively with the public health nurse in the districts in cases of family health problems such as tuberculosis, venereal disease, and crippled children.

We repeat what has often been said: "health services are the concern of everyone," and only well planned cooperative efforts will bring us nearer our goal of good health for everybody.

IMPROVISED PHYSICAL THERAPY EQUIPMENT AND TECHNIQUE OF USE IN THE HOME

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It has been found that many types of physical therapy treatments can be carried on adequately and safely in the home. In view of the present shortage of qualified personnel to perform home therapy treatment and the lack of clinical facilities, especially in rural areas, it is felt that improvised home therapy procedures, prescribed by the physician, would provide the necessary services. With the use of rather simple modifications many modalities of physical therapy can be ordered by the physician and safely carried out by the patient or his family. To review all types of cases that require therapy would be impossible and beyond the scope of this paper. Rather, an attempt is being made to discuss the commonly used modalities and suggest the way in which simple equipment can be substituted for the more expensive types found in hospitals and clinics, and the way in which these treatments are properly administered, so as to provide maximum benefit to the patient.

The modalities used in physical therapy are most often divided into four categories: thermotherapy, hydrotherapy, electrotherapy and mechanotherapy. The physiologic results of these modalities will be mentioned only briefly.

Thermotherapy is the most readily adaptable for home use. The local application of heat is the most common modality used in medical practice. Heat may be generated and applied to the body by means of hot bricks, hot water bottles, flat irons, heating pads and various types of Infra-red generators. Bricks and flat irons are objects commonly found in the home and both can be heated in a hot oven or on top of the stove. They should then be wrapped well in turkish towels sufficient to prevent burning of the skin and then may be applied to the area to be treated. Hot water bottles and heating pads can both be obtained in any drug store. Adequate directions for operation accompany the heating pad, and it is important to take the same precautions of wrapping with the hot water bottle as with the bricks and iron. Any ordinary glass bottle, with a tight-fitting cover, which is of at least one quart capacity, is suitable for use as a hot water bottle. The above mentioned objects can be held to the part being treated by wrapping, using two to four inch wide strips of cloth or webbing, wrapping so that the object is held securely, being sure that it is loose enough to prevent constriction.

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*Physical Therapists, Delaware State Board of Health.

Infra-red bulbs can also be purchased in a drug store. These are effectively used in a bridge lamp, preferably one whose neck can be adjusted to various angles. The lamp can be placed beside the bed and adjusted so that the rays shine directly on the area to be treated. The bulb should be 20 inches away from the body. The lamp shade should be kept on so that the rays will not be diffused throughout the room, and towels or a sheet may be draped around the shade and down to the body, for the same reason. Treatment with any of the above modalities should last at least 20 minutes and should not exceed thirty. It is important to remember that areas where there is a nerve injury, or a lack of sensation from any cause, should not be treated with heat, in the absence of close supervision of such treatment by a physician or therapist.

The use of water in the treatment of injured parts is also easily adaptable in the home. Cold water helps to reduce edema by means of constricting blood vessels in the area. Hot water is used for relief of pain in many conditions, such as arthritis, fractures, etc. The heat causes blood vessels to dilate, thus carrying more blood to the part which helps in turn to relieve congestion in and around the area. Hot water also aids in relaxing tense muscles, thus relieving pain and preparing the part for exercise. The following is a general classification of water temperatures: 55°-65° F—cold; 80°-93° F—tepid; 93°-98° F—neutral or warm; 98°-105° F—hot. Applications of neutral temperature give no thermic or circulatory effect.

A hot tub or foot bath is used to increase circulation and relieve pain and muscle spasm. The bath tub should be filled with enough water to cover the body, at 100°-110°F. The patient should get into the bath quickly and remain in the water five minutes. At the termination of the bath he should be quickly doused with cold water or have an alcohol rub and retire to bed immediately. While in the bath a cloth soaked in ice water should be held to the forehead or nape of the neck in order to prevent cerebral congestion.

The above method can be used for a foot bath, and is valuable in the treatment of sprains, contusions and chills. These baths should not be given in cases of peripheral vascular disease.

The contrast bath, the alternate immersion of a part in hot and cold water, is another very effective means of increasing blood flow. The part to be treated is immersed in hot water for a period of six minutes, then immersed in cold water for a period of four minutes. Continue alternate immersions 7 to 9 times. Be careful to maintain constant temperature by frequent additions of hot or cold water as the treatment progresses. Always begin and end with hot water.

A sitz or hip bath can be given satisfactorily in the home by using an ordinary washtub. The patient sits in the tub with the water at the level of the umbilicus and most of the legs outside the tub. These baths are either hot or cold. During the cold bath, the immersed parts should be rubbed briskly and the rest of the body should be kept covered with towels or blankets. After the bath, the skin should be rubbed dry with a towel. With the hot bath no rubbing is required, but the head should be kept cool with cold packs or compresses. A cold bath should last five to ten minutes and a hot bath should be of 15-20 minutes duration.

Cold compresses for night treatments can be used for painful joints. This is done by wrapping the part in a cloth wrung out of ice water. This is covered with a piece of plastic to prevent the cloth from drying out, then wrapped with a piece of woolen material. This is pinned firmly and left on all night.

It is felt that electrotherapy is unsafe and impractical for use in the home, as this modality requires very close supervision of the therapist or physician.

Our fourth modality is mechanotherapy—the use of mechanical equipment. One of the most useful and versatile pieces of equipment is the ordinary sash cord and pulley. Innumerable combinations of the above with the adjunct of cloth slings and sandbags has numerous possibilities, limited only by one's ingenuity and the circumstances of the illness.

With the addition of a head sling to the above items, head traction, which is a well established procedure commonly used to relieve pain in the cervical and lumbar spine, can be applied at home. Place two hooks in a door jamb, then place two pulleys on hooks and thread a line through the pulleys. On one end of the line, place a five pound sandbag—patient may have larger sandbags available in case it is felt that he can tolerate a heavier load. Patient then slips the sling over his head so that the center of the sling fits under the chin in front and under the head in back. The patient sits erectly in a straight chair in the doorway with his legs extended and crossed at the ankles. A member of the family then lowers the sandbag until the head is under constant tension. Heat applied to the back of the neck just before or during the stretching is of value. Continue this stretching for five or ten minutes.

The sash cord, sandbag and cuff-like sling are also very valuable to the amputee for exercising the stump in preparation for his prosthesis. Place the pulley on the bed post for a pivot point, and patient can exercise both sitting in a chair or lying in bed.

In post-surgical cases or in general convalescent cases in which recumbent exercises are indicated, a bed bicycle can be constructed by simply removing the pedals and socket from a bicycle and mounting the parts in a block of wood, the center of which should be approximately 8 inches from the base of the block. This would then allow space enough for the pedals to rotate.

When the patient is well enough to be ambulatory for short periods and mild exercise is desired, an ordinary bicycle can be used by removing the front wheel and then mounting the front brace on a box or stand and the rear wheel on the parking stand, thus creating a stationary bicycle.

Ordinary home beds can be turned into a hospital type bed by the simple expediency of placing blocks under the legs of the bed and by placing a sheet of plywood under the mattress. In cases where foot drop is to be prevented, a box with closed end toward the head of the bed can be placed at the foot of the bed.

In many illnesses parallel bars and trapezes are indicated. There is now on the market a set of portable light weight bars that weigh only 35 pounds. Also, with simple instructions, a plumber can construct the necessary bars. If this service is not obtainable the patient can line up two rows of chairs, back to back, and effectively use these in place of parallel bars by walking between them and holding on to the tops. If necessary, heavy objects can be placed on the seats to prevent tipping.

The use of slightly more complicated equipment is sometimes indicated. There is a great deal of literature available on plans for constructing such equipment. A carpenter can easily follow these drawings. Information regarding improvised equipment can be obtained by contacting the Physical Therapy Division of Crippled Children's Services of the Delaware State Board of Health.

AMERICAN TRUDEAU SOCIETY

The annual meeting of the Eastern Section of the American Trudeau Society will be held Friday and Saturday, October 31st and November 1st, in Philadelphia, Pa. Headquarters for the meeting will be at the Bellevue-Stratford Hotel in that city. Members of the Society wanting to present papers are urged to communicate promptly with the Chairman of the Program Committee, Dr. Katharine R. Boucot, 311 Juniper Street, Philadelphia, Pa.

+ Editorials +

DELAWARE STATE MEDICAL JOURNAL

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THE 1952 MEETING

The 163rd Annual Session of the Medical Society of Delaware was held at the Rehoboth Beach Country Club, Rehoboth, September 8-10, 1952, President Ervin L. Stambaugh of Lewes, presiding.

The meeting of the House of Delegates was notable for the dispatch with which its transactions were handled, several of the reports involving routine statistics being read by title. The main business of the evening was the adoption as amended, of the fourth Amendment to the By-Laws, as printed in THE JOURNAL for August, 1951, concerning members who have retired, and the reports of the Committees on Feeblemindedness and on Health and Sanitation. The full Transactions will be printed in the December issue of THE JOURNAL.

The scientific meetings proceeded exactly as printed in the August JOURNAL, every scheduled essaying being present. These papers were of a very high order, and were well received and adequately discussed.

The elections for the year 1953 resulted as follows:

President, Victor D. Washburn .... Wilmington
Vice-President, Leslie M. Dobson .... Milford
Secretary, Andrew M. Gehret .... Wilmington
Treasurer, John M. Messick .... Wilmington
Rep. to D. A. M., W. Oscar La Motte, Wilmington

The Woman's Auxiliary met at the Dinner Bell Inn, under the Presidency of Mrs. Sylvester M. Rennie of Wilmington. A business session on September 9th was followed by their own luncheon, attended by 48 members and guests. On September 10th, at another business session, the following officers for 1952-1953 were elected and installed:

President, Mrs. Willard F. Preston .... Wilmington
President-elect, Mrs. Allan R. Cruchley, Middletown
Vice-President, Mrs. James Beebe, Jr. .... Lewes
Recording Sec'y, Mrs. John B. Baker .... Milford
Corresponding Sec'y, Mrs. Edward T. O'Donnell, Wilmington
Treasurer, Mrs. Lawrence L. Fitchett .... Milford

The social events were particularly pleasant. Following the House there was a brief social hour for the members present. The luncheon by the Sussex County Society on September 10 was attended by 93 guests, and that given by the State Society was attended by 89 guests. The main social event was the reception and dinner on September 9, which was attended by 105 persons and was addressed most entertainingly by Mr. J. Wallace Woodford, formerly Mayor of Dover.

The technical exhibits again reached a high level of excellence; there were 22 exhibitors occupying 23 booths. With the expansion of the Society's activities and the increasing costs thereof the Society is becoming more and more dependent upon the financial success of its technical exhibit to make its convention expenses balance. Our exhibitors this year seemed pleased with the arrangements made for them, and several stated they would be with us again next year at Wilmington.

The registration was as follows:

Members	81
Guests, Visitors, etc.	36
Residents, Internes, etc.	5
Exhibitors	34
Medical Society	156
Woman's Auxiliary	44
Total	200

The membership registration, 81 of a total of 333, was 24.3 per cent, slightly below the 1948 Rehoboth meeting.

So passes into history the 1952 Session. Now let us turn our faces toward Wilmington and make the 1953 Session an even better one.

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THE COMMUNITY AND THE DOCTOR*

Erwin L. Stambaugh, Md.,
Lewes, Del.

During the past year I have had the honor of being your President. This honor has significance for it came twenty-five years after my graduation from medical school. Accordingly, I pledge a silver-lined address, omitting such phrases as "short-sighted men," "special privilege groups" and "political machines." These and many other themes have been dusted off on television, on the radio and in the press in the past few months. Speaking of the press, it can so easily "overexpose" you or put you "out of focus."

On the subject of blasts and personal attacks, we are reminded of an anecdote. Winston Churchill was strolling through Hyde Park, famed for its soap box orators, who enjoy the privilege of sounding off. Someone was denouncing the royal family. Churchill found a bobby and demanded, "Aren't you going to do something, why don't you arrest that man?" "You see," was the indifferent reply, "it's this way. It won't hurt them and it might help him."

Recently in an article, "What the Community Expects of the Doctor," the editor of the *Cleveland Press* said: "So take the American people into your confidence, tell them and sell them your story. They are eager customers." First, let us tell them that we like working at our profession for the love of the thing. In a questionnaire to medical students, the answers to "Why I want to be a doctor," were somewhat diverse. Some stated that their fathers were doctors. Others answered that they were interested in doing something for mankind. Few had the delusion that it was an easy way to make a living.

Such answers are acceptable to most of us. If we are interested in serving mankind, ours is a natural human interest job. Physicians have a most intimate and continued contact with patients. Since the decline of priest or pastor influence, no other professional man has such a unique opportunity to render good. The doctor is called not only to relieve pain, but he is also a medical priest and confidante in affairs of love or human relations, in matters of family guidance or secrets.

The decision to become a doctor means often the first step towards an education. Shortly, after initiation, there is an urge to aspire to the top of the heap. At one time every soldier in the French army carried in his knapsack a marshal's baton. It is not intended, however, that all should assume leadership. Like in Napoleon's army, we are successful because there are so many of us in a profession, the general level of which is so high.

From time immemorial communities have recognized their responsibility in caring for the sick. A certain Samaritan bound up the wounds of a Jewish stranger and paid for his hospitalization at the inn. Many foundations have been set up to foster the common brotherhood of man. Community chests have extended services to the less fortunate in their problems toward good health. Foundations are the realized dreams of philanthropists. Community chests are the enjoyment of the individual, emulating the Good Samaritan, "Go thou and do likewise."

The same motives inspire the American doctor. One can enumerate example on example of medical care to patients unable to pay. Hippocrates can be blamed or praised for our obligation to the "always with us poor." "Sometimes give your services for nothing, calling to mind a previous benefaction or present satisfaction and if there be an opportunity for serving one who is a

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*Presidential Address, delivered before the Medical Society of Delaware, Rehoboth, September 10, 1952.

LIBRARY OF THE
COLLEGE OF PHYSICIANS

stranger in financial need, give full assistance to all such. For where there is love of man, there is also love of the art."

The Welfare State, such as England is now, was conceived apparently by those who wanted to practice "noblesse oblige" to the little man, and to the man in the street. This writer holds no brief against constituted authority in England and, therefore, no pronouncement is made of its good or evil. Certainly, those who have much should give something of their plenty, whether it is position, privilege or money. It is for each of us to make up his mind, how much the obligation of the nobility goes beyond the individual and whether governmental practice of the doctrine is desirable. Would socialization of the doctrine surpass the acts of mercy of a modern Samaritan, a conscientious surgeon or a philanthropic realist?

A story is told of Dr. William Mayo. He was called in consultation one afternoon in the case of a high school boy. When he decided the boy needed an operation, the boy exclaimed, "But I haven't any money for an operation." Dr. Mayo looked at him, "Do you think you can earn some after you get well?" The boy thought he could. "All right you see if you can send me ten dollars a month until you've paid one hundred dollars. Two five-dollar bills came to Dr. Mayo's desk regularly. When the tenth pair of five-dollar bills arrived, Dr. Mayo sent the boy a check for a hundred dollars plus generous interest, with a note "You've shown yourself and me, you could do it." I might interject that doctors can well afford to let the patient alone who does something regularly about his unpaid account. Jogging memories occasionally is allowable. I visited Rochester, Minnesota, in the depression years. Talking over hard times with the bus driver, he informed me that the Mayos never brought a lawsuit against a patient for medical services. The man in the street knew this. Several years later, Helen Clapsattle in her book, "The Doctors' Mayo," recorded the point in print.

In analyzing our worth to the community it is genuinely felt that patient-physician relationship is improving. We have come a long way from the wrecker who walks the town content with the labors of tearing down the confidence that the majority of patients have in their doctor. On the other hand, physicians have come a long way from the laissez-faire policy of public relations of several years ago. Dr. John Cline, in his address, June 1952, to the A.M.A. House of Delegates put new life in our ethics. He states "our code of ethics is not a body of law but is a pattern for conduct. In a sense, it is the code of gentlemen in the practice of medicine. Even if it did not exist, it would not be violated by many because the vast majority of our members are gentlemen." He further adds "Unfortunately, there are a few of our colleagues who do not respect these obligations. When they are encountered they must be thrust from the company of gentleman." I personally believe that the large fee money chargers, doctors who want to be excused from night pains and those who want their fee ready will soon be retreating to a forced retirement.

The aims of the profession as regards ethical practice of its members are clear cut. Dr. Louis Bauer in his Public Relations Conference in December 1951 cautions thus: "that physicians must be brought to the realization that medical progress will cease unless physicians work together." One of the best ways to work together is in the meetings of the several medical societies. I have nothing but praise for the members of the Sussex County Society who are holding together a small but strong unit. I likewise hold respect for the members of the Medical Society of Delaware, who almost to a man sit as the House of Delegates year after year. They are the "Old Guard" expressing loyalty without political intent.

About a physician's loyalty, Hippocrates swears "To hold my teacher in this art equal to my own parents, to make him partner in my livelihood, to teach them this art, if they want to learn it, without fee or indenture." Congress was looking for a Code of Ethics not too long ago. It was early accepted in their code that loyalty to God and country were above loyalty to party or organization. In solemn affirmation, American doctors subscribe to this higher, straight-shooting loyalty.

From everywhere we hear that physicians

should interest themselves in all types of political issue. "Mr. Politics," the patient, wants a shot in the arm from the doctor. It is true that physicians can help the American way of life, and if you can be a good politician and a good doctor, get in the swim. A physician son of the late Senator Zellers of Mississippi warns me—don't plunge into local politics, it's safe on a state or national level.

This writer is convinced that medical men have isolated themselves from community life. I judge myself severely on this point. A poignant reason for failing to assume leadership in community affairs is our poor training but we cannot be too apologetic, when church, school, hospital or lodge call for our talents. These organizations can stimulate our thinking and improve our moral intellect in godliness and good government. Our affiliations should not direct our thinking, however, to labor, agriculture, business or even medical consultations. Far too many join up because it is good business and like birds of the air flock to the proverbial mustard tree. Sooner or later, these men show up somewhere, seeking power with contract.

If I may, let me refer to the plutocrats in medicine. Here is power with sanction. They play up the distorted idea that the doctor business is crowded. They set standards higher and higher but fail to make room at the top for the large number of excellently trained men asking for the too few residencies. Many such young men become frustrated before they complete their studies—the wolf knocking at their door. John G. Clark, a Philadelphia surgeon in the early 1900's, trained three full-fledged professors. Such unselfish teaching of surgery could be duplicated in large and small community hospitals. Unfortunately, too many surgeons like to speak of how many assistants they have rather than how many surgeons they are training. We are our brother's keeper and teacher, whether our hospitals are on a university or a community level.

A step forward has been taken by the American Medical Association and the American Medical Education Fund will be worthy of the name if it makes money available for teaching medical men in smaller communities as well as medical students. For, it is singular that not one of the top-flight men on the program this week stressed the importance of a large audience. With such talent abroad in our small communities, I have hope that the government will some day bow to our claim that American medicine, a private enterprise, is the best in the world.

After a few months I bow out as President of the Medical Society of Delaware. I have gained much and contributed little. There is a thought that I would like to convey to you, contained in a Greek inscription near a hearth in Pyne Tower, Princeton University. The inscription was taken from an early Christian tombstone in Syria. Its translation reads: "I sojourned well, I journeyed well, and well I lie at rest. Pray for me." May it be said of every medical doctor in every community in Delaware that he has done just that.

CHEMICALS AND HEALTH*

John H. Foulger, M. D.,**
Wilmington, Del.

Every advance in science or technology applied widely in daily life in transportation, communication, manufacture, therapeutics or any other field brings with it new responsibilities. Not the least of these is the assuring that new benefits conferred are not offset by new and difficult problems in public health. Experience has shown that when new discoveries are used with care and intelligence health problems are kept at a minimum and benefits are multiplied; but it also shows that when they are used with carelessness, stupidity or lack of consideration for others, as in the case of the automobile, there may be an accumulating and disgraceful record of deaths and injuries.

At the moment we live in a "chemical age." Chemical industry throughout the world and especially in the United States has made from the alchemists' four elements, "earth, air, fire and water," new materials which alone or in combination with products of other skills bring us improved transportation and communication; improved housing and more colorful and useful equipment for it; new clothing materials; better medicaments; and, last but not least important, more abundant harvests of better, cleaner and more nutritive food and the means of protecting that food against pests of all types, against dust in the air of our cities, and against bacterial contamination. Yet there are those who have become fearful lest, at the same time, the "Chemical Age" is bringing us important health problems.

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*Read before the Medical Society of Delaware, Wilmington, October 10, 1951.

**Director of Medical Research, E. I. du Pont de Nemours & Company.

The chemical industry was a comparative infant in 1914 at the beginning of the First World War. It rapidly attained adolescence during the latter years of that war in supplying a multitude of necessities for our allies and ourselves, including munitions of war. When released from the necessity of diverting much of its attention to military needs, the industry soon attained manhood and is still growing rapidly. It is far more prolific in producing valuable materials of peace than it ever was in making those of war.

It is unfortunate that a knowledge of, and particularly a vision of, the benefits which could be conferred by industrial chemistry did not exist during the period of 1914-1918. During that period, the general public was suddenly and unexpectedly introduced to certain properties of new chemicals which could give great concern. In May, 1916, the German Army attacked French and Canadian lines in France with chlorine gas. By introducing chemical warfare, the enemy gained a tremendous military advantage, the outcome of which we could not foresee, and propagandists gained material for great activity. Echoes of the propaganda campaign are still with us. Only about a week ago, radio news commenators laughed at the disclosure that one of the so-called "violations" of the neutrality of Kaesong was the entry into that city of a delousing squad of South Korean soldiers armed with lethal weapons—DDT spray guns. Yet this claim is no more absurd than statements in medical literature which identify DDT with virus X or which ascribe poliomyelitis to chronic cyanide poisoning.

We are concerned here with the medical record of the effects of chemical warfare in World War I because it gives us a background against which to compare peacetime hazards. The records show what may happen when deliberate attempts are made to injure human beings by mass exposure to high concentrations of chemicals, irritating principally the respiratory system. The medical record is not well known, especially to the general public. It is as follows: Gas casualties in all the armies engaged (allied or enemy) represented only 4.6 per cent of all casualties produced by the weapons and hazards of war. The total deaths from gas represented only 1.3 per cent of all deaths. Among the casualties due to weapons and hazards other than gas, the death rate was 25.5 per cent. Among gas casualties, the death rate was 7.6 per cent. In the American Expeditionary Force in France, gas casualties represented 31.5 per cent of all casualties. Only 1.8 per cent of those injured by gas died. Of those injured by weapons and war hazards other than gas, 6.5 per cent died.

The record of chronic injury is no less favorable. In 1920, the British Ministry of Pensions recorded that gas warfare was responsible for only 2 per cent of all pensionable disabilities among British troops. Thirty-five per cent were caused by weapons other than gas and 63 per cent by disease. In considering types of disease which cause most public alarm, American Expeditionary Force records show that only 4 per cent of all cases of blindness were due to gas despite the fact that gas was responsible for 33 per cent of the non-fatal casualties. Tuberculosis occured in 2.45 men per thousand of those injured by gas, whereas the annual rate for all enlisted men serving in the American Expeditionary Force in France was 3.5 per thousand in 1918 and 3.4 per thousand in 1919. It would seem that the tremendous horror of chemicals built up during the First World War is, from the medical point of view, unjustified, and persistent fears of the action of chemicals derived from First World War propaganda are not based upon fact.

In recent months, two situations have aroused in some quarters the fear of public injury by the increasing use of new chemical products—the Donora "smog" disaster and popular magazine articles concerning chemicals in foods.

During the last week of October, 1948, the town of Donora, Pennsylvania, was enveloped by "smog". From the morning of Wednesday, October 27, to the afternoon of Sunday, October 31, the little valley in which Donora is situated became virtually an enclosed chamber into which poured all gaseous and particulate matter produced by domestic and industrial activities. As concentrations of irritant material in the air built up, sickness increased; and, before rain cleared the "smog" on Sunday afternoon, twenty persons were dead and several thousand more had become ill. The situation was investigated after the "smog" had cleared by the United States Public Health Service and other agencies. First it was believed to be due to chemicals of industrial origin, but actually no single chemical was found in sufficient concentration to be, alone, a cause of respiratory distress or to affect the cardiovascular system. In those affected by the "smog," both incidence and severity increased with increased age. Among those who were fatally ill, previously existing diseases of the cardiorespiratory system appeared as a significant factor. In general, the "smog" appeared to produce a degree of irritation of the respiratory tract and other exposed mucous membranes varying from mild to severe. Pathological study of three of those who died showed acute change in the lungs characterized by capillary dilation, hemorrhage, edema, purulent bronchitis and bronchiolitis.

The Donora incident caused great alarm and the President called a United States Technical Conference on Air Pollution in Washington on May 3, 4, and 5, 1950. We attended this conference as a member of the Health Panel. The Conference disclosed that the Donora incident was due to unique atmospheric conditions. Apparently in the Donora valley during the period of the "smog" the temperature of the air near the ground was below that at higher altitudes. In the absence of wind, the usual convection currents did not exist and smoke and gases emitted from households burning soft coal and from industrial plants could not be diluted or moved out of the valley. The Conference disclosed no new information on the relationship between atmospheric contamination and disease. It was agreed that "pollution of the atmosphere with allergenic material of natural, artificial or industrial origin is associated with a frequent, and apparently increasing, occurrence of acute and chronic disease, involving especially the respiratory tract and the skin." But it was also agreed that "the effects of the more common atmospheric pollutants upon the general health of the population of our urban and industrial centers have not been demonstrated in the form of authenticated chronic disease processes." During discussion by the Health Panel, it was pointed out that the most important source of information on human beings has been derived from industrial medical and hygienic experience and that the occupational diseases which occur in association with occupational experience have not been shown to occur, except with the greatest rarity, in the general population. To these conclusions we would add that we know of few "allergenic materials" of industrial origin which would be emitted from industrial plants and none which would appear in the general urban atmosphere in adequate concentration to cause allergy. The major causes of allergy are still pollens and other materials of natural origin.

There are very few places in the United States in which the conditions which led to the Donora situation could be reproduced. There are, to my knowledge, none in the State of Delaware; nor are there, to my knowledge, any cities in the State of Delaware in which atmospheric contamination, either from domestic sources or from industrial plants, could reach such a degree that serious acute illness or chronic illness might result.

During the past 18 months, a House Select Committee to Investigate the Use of Chemicals in Food Products has been sitting to take evidence on the possible effects upon the public health of chemicals used in the production, processing and packaging of foods. During the sitting of this Committee a number of sensational articles have appeared in popular magazines, all of them based upon the less scientific testimonies before the House Committee. Whether or not this propaganda has any ulterior motive is not pertinent to this scientific discussion, but the facts concerning food and the nation's health are pertinent. Since 1906, the Food and Drug Administration of the Federal Government has had wide powers to control the safety of food moving in interstate commerce. In particular, these powers have been wide since an amendment to the original Food and Drug Act was passed by Congress in 1938. As part of its function, this Administration investigates incidents of food poisoning throughout the United States, attempting in so far as possible to allocate the cause. Each year the Commissioner of the Administration makes a report to his superior, originally the Secretary of Agriculture but at the present time the Administrator of the Federal Security Agency. During the years 1938 to 1948, inclusive, 647 incidents of food poisoning were investigated. Of these, chemicals played a part in only 53. The others were due to botulism or more often to bacterial contamination (Table 1). In making this summary, I have studied concurrent medical literature in an attempt to find actual medical evidence of the outbreaks reported, particularly when they are claimed to concern chemicals. I have been unable to find in medical literature any incident in which chemicals incorporated into foods during production, processing or packaging for interstate commerce have caused serious injury or death. The record of the Food and Drug Administration only contains one episode of this type, in which monochloracetic acid incorporated in an orange drink is said to have caused gastroenteritis. There is no medical record of this occurrence. Those incidents investigated by the Food and Drug Administration which did involve chemicals were, predominantly, due to accidental introduction of chemicals into food during preparation in the kitchen. Sodium fluoride used as roach poison was the chemical incriminated in most of the fatalities and in more than half of the cases of injury.

TABLE 1
FOOD "POISONING" 1938-1948
Summary of Administrative Reports
Federal Food & Drug Administration

Incidents	Involving	Individuals Affected			
Total	Chemicals	Total		Chemicals	
		Fatal	Not Fatal	Fatal	Not Fatal
647	53	160	11,091+	68	953+

Including **Sodium Fluoride** accidentally mixed in food.

Fatal	61
Not Fatal	444+
Total	505+

It seems a valid deduction from this record that during the period covered serious health hazards have not arisen by the application of modern chemical technology to the production, processing and packaging of food. During this period of time, however, there have been many outbreaks of food poisoning due to decomposition of the food by bacteria or to production within the food of toxic chemicals of bacterial origin. Regarding the causes of food poisoning, the Commissioner of the Food and Drug Administration reported as far back as 1940: "It is further a matter of concern that poisonings from the accidental inclusion of insecticides in food should continue to occur within the home. Regardless of the application of food laws, it is obvious additional precautions must be exercised by those who handle and prepare food if there is to be material reduction in the number of cases of illness attributable to contaminated foods."

Failure to disclose evidence of widespread acute injury due to modern chemical technology in the food field has led some to postulate chronic poisoning as a cause of increasing "nervous and mental diseases" and degenerative diseases. Such an idea is entirely without factual basis. Experience gained from many years' study of industrial chemicals indicates that no new or unexplainable diseases are being produced in the general populace by minute quantities of new chemical products in foods. The increasing care being taken in toxicological testing makes it less and less likely that injury will develop from advances in food technology. There is one group of compounds, however, which may give us some concern. I refer to those biologically active principles which we term "hormones." In our opinion, the general public should not be exposed to such compounds either of natural or synthetic origin, nor to their active derivatives, except under close medical observation. These compounds, however, are drugs and their use can be controlled by the wide powers given the Federal Food & Drug Administration under the New Drug amendment added to the law in 1938.

There remains one field to discuss—the possible effect of chemicals used in the home. Our summary of Food & Drug Administration reports showed that careless handling of food in the home was the major cause of accidental poisoning through foods. An increasing number of new products of the chemical industry is used in household tasks. Are poisonings frequent?

The National Safety Council each year publishes a booklet entitled ''Accident facts.''

TABLE 2

COMPARATIVE DATA ON CAUSES OF DEATH IN 1947

Heart disease	460,580
Cancer	189,811
Cerebral hemorrhage	111,725
Accidents	99,579
Nephritis	80,288
Pneumonia	54,172
Tuberculosis	48,064
Premature birth	41,053
Diabetes	31,515
Congenital malformations	20,315

Automobile	32,697
Home	34,500
Occupational	17,000
Others	11,940
Absorption of poisonous gas	1,938
Motor vehicle exhaust	285
Utility gas	1,009
Other sources of carbon monoxide	354
Other poison gases	290
Acute poisoning by liquid or solid[a]	1,504

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[a]—More than 25% due to barbituric acid and derivatives

In Table 2 we have summarized data collected from accident facts concerning causes of death during 1947. Accidents in the home numbered 34,500. Automobile accidents totaled 32,700 in round figures. Chemical poisonings, by liquid or solid, numbered 1504, of which more than 25 per cent were due to barbituric acid and derivatives. Reports of accident facts in more recent years show a similar distribution of causes of accidental death.

A more detailed picture of the situation can be shown by data collected from summaries of non-industrial poisoning cases assembled by the Manufacturing Chemists' Association from a national clipping agency. The summary presented in Tables 3 and 4 was collected over the period January, 1944, to December, 1951, but does not necessarily represent all chemical injuries occurring during that period. It does, however, give a picture of the types of material involved and the relative hazards which they may introduce into the home. It will be noted that three groups of materials are important as hazards to both adults and children, namely, medicaments, pesticides and solvents. The group of medicaments includes all types of compounds, whether obtained on prescription or not on prescription, which may be present in the medicine chest or the cupboards of an ordinary household. No one material is prominent, but I would point out that even the supposedly harmless aspirin can have serious effects upon young children. Among the pesticides, three types appear particularly dangerous to children, namely, those materials used as poisons for rats, for ants and for roaches. These are usually barium and thallium compounds and fluorides or fluorosilicates. I am pointing this out because in this case the materials in the home to be used specifically as poisons and are, in the majority of cases, so labeled. Among the solvents, kerosene occupies a predominant place as a source of injury to children. The cases of poisoning of children by drinking kerosene occurred at ages under five years and mostly under two years. Kerosene is not, under ordinary circumstances, harmful. It can cause quite serious skin burns and would be extremely irritant to the gastrointestinal tract if taken by mouth; but to young children it is very dangerous, leading very rapidly after drinking to pronounced irritation of the lungs and bronchopneumonia.

No amount of legislation and, I am afraid, no meticulousness of labeling materials used around the household will necessarily prevent this form of accident to young children. It is a result of thoughtlessness, carelessness or actual indifference and in this respect is comparable to the situation which obtains with respect to injuries by the automobile. It should be pointed out, however, that the total number of deaths and non-fatal poisonings of this type is small compared with the total produced by the automobile. During the seven years over which the data of which Tables 3 and 4 were collected, there were, in round figures, about 200,000 deaths in automobile accidents and 8,000,000 cases of non-fatal injuries. Accidents in the home, other than poisonings, caused almost as many deaths as the automobile.

TABLE 3

ACCIDENTAL (NON-INDUSTRIAL) CHEMICAL POISONING

	Children and Adolescents (0-18 yrs.) Total	Fatal	Adults Total	Fatal
Acids	8	4	16	2
Alkalis	57	12	6	3
Disinfectants	49	1	11	4
Laundry materials	58	5	3	0
Medicaments	216	81	41	14
Pesticides	260	54	33	18
Solvents	390	63	21	8
Other chemicals	130	28	20	6

TABLE 4

ACCIDENTAL (NON-INDUSTRIAL) CHEMICAL POISONING

Important Causes of Accidental Injury to Children and Adolescents

				Total	Fatal
Pesticides	**260**	**54**	**Solvents**	**390**	**63**
including			including		
Rat Poison	101	34	Cleaning Fluids	37	8
Ant Poison	55	6	Kerosene	247	41
Roach Poison	23	5	Gasoline	33	4
			Turpentine	36	5
	179	45		353	58
	Total	Fatal			

The hazards of chemicals used in the home can be reduced, or indeed completely eliminated, by a few simple precepts: 1. Never store any cleaning fluids or pesticides or medicaments in places easily available to young children or to irresponsible adults. 2. Never transfer any of these materials from the original packages to unlabeled containers. 3. Never place these materials in cupboards or medicine chests close to articles used in preparing food or to medicines. 4. Always real labels and try intelligently to conform to the safety precautions prescribed by those labels.

We planned in this paper to answer the following questions: 1. Is there serious risk of harm from "smog" in our cities? 2. Is there serious risk of harm in the use of chemicals and chemical products in preparation of our food or in household tasks? 3. If risk exists, where does it lie and how can it be prevented? The answers are: 1. Except under unusual atmospheric and meteorologic situations such as those existing in Donora in October, 1948, there is no serious risk of harm from "smog" in cities. 2. The record indicates that the use of chemicals and chemical products in production, processing and packaging of our foodstuffs has not led to serious harm, nor is there reason to expect new and serious injuries as a result of this use of chemicals. 3. Chemicals and chemical products used in the household do offer a hazard, particularly to small children. The hazard is small compared with others present in the home and with the hazard from the automobile. Even this hazard, however, can be reduced or completely eliminated if care and common sense are used in the using of new materials in the home.

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DISCUSSION

Dr. D. H. Aitken: (Wilmington) I think we should congratulate Dr. Foulger for the excellent presentation he has given us. The value of chemicals in health is becoming more and more obvious to all of us. I am certainly in no position to discuss the industrial aspect of it, but I would like to say just a few words about the therapeutic use of chemicals and the way it influences our treatment today.

It is of interest to note that in the last analysis they had from the pharmaceutical companies it is estimated that sales have risen from $445 million in 1947 to an estimated one billion dollars of sales in 1950. Of that total over half of the sales have been in the antibiotics, histamines, cortizones and ACTH fields.

It is altogether too early in the use of ACTH and cortizone and some of our antibiotics to say definitely whether it is going to have an influence upon the future health of our country and also the generations to come.

The other subject I would like just to touch briefly on is hormones. There is no doubt that the use of hormones in our practice today is quite popular. You can't open a magazine or a newspaper today that you don't find large advertisements facing you "Regain lost youth—all you have to do is take one or two hormone tablets and you are well on your way."

It wasn't until two years ago that hormones were sold over the counter without prescriptions by one of the leading drug houses in the country, which just recently has been forbidden to do so.

There is no doubt that there can be great harm in the use of these hormones. The one that will cause probably the most harm is testosterone. That is the one used probably more than any of the hormones. We know testosterone is dangerous because of carcinoma of the prostate. You probably know that some 8-10,000 people die every year with carcinoma of the prostate, and a review of different authorities on this subject reveals that they estimate that 14-16% of all men over the age of fifty have carcinoma of the prostate. That means that many of these are discovered postmortem—they are asymptomatic.

We know testosterol will cause carcinoma of the prostate to grow very rapidly. And with testosterol being used with drunkards, the problem becomes a more serious one.

There is a question I would like to ask Dr. Foulger on this smog incident in Donora. Granted, as I understand it, they were unable to find the cause of why the 20 people died, and the thousands of casualties they had at the time—and, I believe Dr. Foulger said it is very unlikely that this will ever occur again because of the very peculiar atmospheric condition—but, I am wondering if it would not be highly probable that the same thing could happen in the San Francisco Bay area, for example. As I understand it that is very similar to the situation that existed at Donora where a similar condition could quite possibly arise and where there is a much larger amount of space involved and also a greater number of people involved.

Dr. J. W. Howard: (Wilmington) I feel quite honored being asked to discuss such a paper as Dr. Foulger has presented. I consider it a scholarly piece of work and I hope that many of our conferees who found it strenuous getting here this morning will have the opportunity to read this paper. I think that Dr. Foulger presented to us what could be an extremely complex problem in a quite interesting way.

I want to compliment Dr. Foulger. I think that he has given us a number of themes, that as we sat and listened to or will read later, we can develop in our own mind to our own advantage and to the advantage of our community.

Underlying our whole program here I think is a distinct demonstration that we can have a great deal of faith in our reliable chemical organizations. The pharmaceutical houses and chemical manufacturing concerns have assumed the responsibility that we as individuals, I am certain, have failed to practice. We have good legislation to help us. And the record that Dr. Foulger has indicated I think is duplicated in the experiences in the hospitals. We don't see problems that we can trace to our reliable manufacturers. We see many problems that can be traced to individuals. We set up extremely high and fine standards for our solutions, our chemicals, and then we turn around without even a thought and manufacture or concoct some solution without thought of the responsibility. We are prone to criticize large organizations, but we quietly overlook our own faults. So I think that we can gain a lesson from that. I think that we can take pride in our larger organizations who have assumed a watch-dog role for all of us.

Many of our small, fly-by-night organizations put a pretty label on the package that attracts, I am afraid in many instances some of our own scientific minds, and they are peddling lethal compounds, some of which I, personally, have come in contact with. Not our major chemical manufacturers.

Now, of course, associated with that is a problem in human nature. Mr. Public is always looking for the other side of the rainbow. He is always hoping, and so he answers the advertisements, or he travels to distant places because the interstate commerce laws prevent the pretty label package being sent through the mails or across state borders, and the Lord only knows what he takes.

Our cancer quacks run a billion dollar industry in this country, working on the failings of human nature. As was previously mentioned in discussion, we have the individual who is forever looking for that vial that will rejuvenate his life and happiness, without a thought to what is inside that vial. Granted, in most instances the products turn out to be harmless, and that is fortunate for all of us. But I think that we should take a renewed check-up on ourselves in the fact that we should stand by reliable standardized chemical products that we use and in the use of which we know with what we are dealing.

As was indicated, the progress of knowledge in the use of more and more compounds begins to create new problems. In proper hands, those problems can be met.

I can add but one more suggestion in line with the problems that lie ahead. Hormones have been indicated—and what I refer to is not necessarily a chemical, but somewhat related—and that is, the ever-increasing problem of disturbing the antibody system of our patients by injecting various compounds into that body. As time moves along the promiscuous use of blood is developing an antibody complex that most of us can't understand, and we don't know what the future will be. We are injecting solutions, in various instances home-made, that are not rigidly standardized, and we are upsetting chemical as well as antibody balance and creating a problem most similar to the private individual in the home. Our challenge is, then, to straighten out our own bailiwick. I think we can have confidence in our fine industries that are doing a fine job and a reliable job and giving us tools with which to live and work.

Dr. Foulger: Thank you, Dr. Aitken and Dr. Howard. Both gentlemen have brought into the discussion quite properly the field I deliberately omitted from the paper.

Antibiotics, hormones, whether natural or synthetic, or synthetic derivatives, lie in the field of drugs. Since the revision of the Drugs and Cosmetics Act in 1938 the Food and Drug Administration has extremely wide powers to control the entry into interstate commerce of a new drug. Most states have duplicated that law; Delaware has none.

The field of drugs is a field which is too complex to discuss in a paper such as this. It is really that field in which most hazards occur, and yet it is a field in which there should be most control, because ostensibly drugs are administered under medical control. Carelessness in allowing renewal of prescriptions, in making up too large a dosage, acts of that type as well as sometimes quite dishonest dealing on the part of patients and others, lead to many accidents. Certainly I feel the public should not be subject to the action of those active materials endocrines, whether they be natural or synthetic without very close medical control.

If I am correct, Dr. Aitken, I stated that I know of no place in Delaware where the Donora situation could be repeated. I know of a number of situations in the United States outside of Delaware, but those are all being watched very, very carefully.

The smog situation is a peculiar thing, and it would take too long to go into it. Millions of dollars are being spent in Los Angeles in the control of the atmospheric conditions. If one sees photographs of smog in the Los Angeles region, however, one realizes that much of it comes from the brush fires in the back yards of the people living there. The atmospheric peculiarity lies in the peculiar sulphur compound which doesn't seem to appear in other places and which is extremely irritating to the eyes, while in the Donora incident no serious concentration was found in the atmosphere to cause the final results. Of course we could use in explanation, the theory of stress. Anyone with impaired coronary-respiratory function in a situation in which the oxygen available to him in the air is reduced or it is made more difficult for him to get into his lungs because of coughing and sneezing and expectoration—any such person is under additional stress. Already, in other words, according to the theory, he is under stress from his disease and under the one stress he is less resistant to the second stress, and so on.

From many experiments done in the

Haskell Laboratory over the last 15 years, I feel that probably the explanation of the deaths in Donora and DeNoise Valley in Belgium in 1930 is on the theory of physical stress interfering first with respiration, secondly with the cardio-vascular system, complicated by the atmospheric conditions.

INDUSTRY'S CHALLENGE TO MEDICINE*

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It has not been too many years ago since the family physician was forced, through necessity, to care for practically every medical problem that arose in the home. As medical science advanced, however, it became more and more obvious that no general practitioner could hope to obtain the training and absorb the knowledge necessary to become expert in all phases of the medical field. We saw, then, the rise of specialization—the channeling of postgraduate training into one particular specialty, and the funneling of study and training *into* that field. Today, our specialty system is well established and is apparently well-defined.

There is, however, an exception to this otherwise orderly system—one single specialty which cuts across the formal lines of demarcation of the other specialties, and which, at the same time, is tangentially a part of all of them. I speak of *Industrial Medicine,* the art and science of preserving the health of the worker.

Medicine in industry is *not new.* Physicians have been interested in the effects of occupation on health as far back as the fifth century, B.C. Hippocrates, the father of medicine, described the hazards involved in metal working, and recorded diseases found peculiarly among tailors, farm hands and fishermen. Throughout the development of medicine through the centuries, a scattered handful of men carried on that deep interest in occupational health. Pliny the Elder, Galen, Ellenbog, Paracelsus, Ramazzini—these are famous names in the annals of industrial medicine.

As civilization advanced and as the social and physical sciences developed, this sphere of medicine came more and more to the fore. Increasingly complex problems required increased technical knowledge. Expansion of occupational medicine into industrial relations, accident prevention, medical insurance, sanitation, workmen's compensation and job placement activities demanded of the physician an unusual variety of talents and interests. The men who can fulfill those requirements are our industrial physicians of today.

It is a strange situation that in a highly developed industrial civilization such as ours the role of the industrial physician has been so consistently misunderstood and misrepresented. This is particularly true, unfortunately, among the members of our own profession. The reason for this is not altogether clear, but it may well be due only to a lack of understanding of the work of the industrial physician—a lack of understanding of his functions, his techniques and his obligations.

I would like to clarify the position of the industrial physician in medicine, to explain some of his problems, and to outline the responsibilities *he* assumes in accepting the burden placed upon him by industry.

It must be emphasized at the outset that industry's interest in medicine and medical service *is not*—and never *has* been—humanitarian. Industry's interest is basically *economic* in nature. Industry has learned that the medical profession can help to attain that economic objective.

The goal of industry, understandably enough, is to keep as many men working at as many machines as many days as possible. It has not always been so simply stated. Shortly after the passage of the first effective Workmen's Compensation Laws in 1911, industry's main concern was in decreasing the direct cost of injuries sustained on the job, for which they had now become legally responsible. This was accomplished through establishing dispensaries and hospitals, for repair-shop surgery only.

Through the years, however, industrial thinking matured. There came about a growing realization of the economic costs of illness-absenteeism, of idle machines, of high labor turnover, decreased production, poor product quality, of training new workers, of the many *in*direct costs of industrial injuries—all summing up in the eyes of industry to *increased production costs.* It was soon realized that there is a direct relationship between an employee's productivity and his health. It was recognized that the most expensive machine was no more efficient than the men who operated and maintained it. It was realized that *human* maintenance was just as important as machine maintenance. Medicine was—and is being—called upon more and more to render this service of human engineering and maintenance. This is not a simple problem. Consider these facts for a moment:

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*Read before the Medical Society of Delaware, Wilmington, October 10, 1951

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In the United States today, there are over sixty million people gainfully employed. Each of these people is, directly or indirectly, subject to some form of occupational health hazard, whether he be bookkeeper, truckdriver, welder, deep sea diver, executive, or trash collector. Each of these people, in the course of his daily work is subject to conditions which may adversely affect his health and well-being. Such health hazards fall into no particular pattern. Their sources are numerous and varied—their effects on the human great.

Occupational health hazards may be *biological* in origin; anthrax among wool sorters; brucellosis among farmers and meat handlers; the fungus infections of hide-workers, millers and cigar makers; the septic infections of fertilizer workers, butchers and glue makers; the rabies and tetanus of animal handlers.

They may be *physical* in nature, resulting from exposure to extreme heat, as seen in foundry and glass workers, or extreme cold, as seen among cold storage and frozen food workers. Conditions of constant dampness is a health hazard among steam vulcanizers, paper mill workers, fishermen, brewery workers. Deep sea divers and caisson workers are subjected to tremendously *in*creased air pressures; flying personnel to conditions of *de*creased air pressure. The occupational hazard of x-ray and radium for radiologists and x-ray technicians has long been known. Not so well known is the fact that industry is making increasingly greater use of the x-ray in manufacturing, particularly in the detection of hidden structural defects in metals. Hazards from radioactivity have been tremendously increased as a result of developments in atomic research. Adaptation of atomic engines to peacetime uses will further increase that hazard.

Occupational health hazards may be *mechanical* in origin. Electrical burns and electrical shock are hazards to linesmen, electricians and power-plant operators. Conditions of excessive noise, with resulting hearing impairment, are common. There are occupations involving vibration or repeated shocks, as seen among riveters or air-hammer operators. Other occupations require specific repetitive motions, as in furniture polishing, mail sorting, haircutting, writing. All of these cause their share of worker disability.

Perhaps the most widely recognized of all occupational hazards are those resulting from exposure to chemical substances, such as dusts, metals, solvents, gases and fumes. We have long recognized the silicosis of miners, stone workers and sandblasters, but perhaps have *not* recognized that silicosis is also a special hazard in many other occupations: the manufacture of ceramic ware, bricks, glass, and in many grinding, sanding and polishing operations. Lead intoxication is an old story in medicine, but how many of us recognize the very real hazards involved in the handling of mercury, beryllium, manganese, chromium, cadmium, and the many other metals now commonly used in industry? We may remember that the inhalation of carbon tetrachloride is harmful, but how many of us know of the dangers faced by the worker who must handle benzine, carbon disulfide, trichlorethylene, naphtha and hundreds of other industrial solvents?

The fact that these hazards may affect the human body in any of a number of ways makes the problem no less difficult. There are many inhalation hazards: the dusts of silica-bearing materials, the vapors of solvents and metals. There is a tremendous number of substances which have a deleterious affect upon the skin, as direct primary irritants, as secondary sensitizers, or in other ways. Certain substances affect the gastro-intestinal system, others the genito-urinary system or the nervous system. There are effects upon the bones, muscles and joints. There are systematic diseases from occupational sources. There are many injuries and deaths from industrial accidents. In short, gentlemen, industrial hazards arise from numerous sources, manifest their presence in many ways, and may attack any part of the body. I have presented this somewhat grim picture to impress upon you the magnitude and extent of the industrial hazards of today. Certainly, science and industry together have made tremendous strides in the past few decades. With their progress, however, they have imposed upon the medical profession problems greater than ever before in our history.

I would like to mention a few practical examples. Each one of us has, at one time or another, prescribed nitroglycerine in the course of our medical work. We know that it is a powerful vasodilator and that it brings about a prompt physiological response in the patient. Yet how many of us have ever considered the problem faced by those who manufacture these little white tablets? Potent as it is in the patient, nitroglycerine is equally potent in the pharmaceutical worker who may inhale the dust or absorb it through the skin. It is similarly a problem for the explosive worker. ''Nitroglycerine'' or ''dynamite headache'' is severe, often incapacitating, and discouragingly difficult to treat. In its prevention, the industrial physician must recognize factors of individual susceptibility, the temporary immunity that may be acquired, the effects of weather and alcohol on nitroglycerine workers. In his job placement procedures, he must eliminate from such exposure those individuals most likely to react unfavorably (alcoholics, hypotensives, those with hay fever and chronic upper respiratory diseases). The physician must be familiar with dust suppression techniques, with exhaust ventilation mechanism, with respirators, goggles, gloves and other items of individual protective equipment. He must, in short, be able to effect changes in the working environment, as well as in the worker.

Each of us has used streptomycin. We are familiar with the hazards to the patient entailed in its use, but how much do we know of the hazard to the streptomycin worker? Here and there in the literature, within recent years, has appeared an isolated report of dermatitis in nurses preparing streptomycin for injection. In the manufacture of biologicals this presents a very real and hazardous problem. In a moment I shall show a few slides to illustrate just how bad this hazard may become.

I mention these examples to illustrate the fact that all of us are somewhat prone to take things too much for granted. The things we use in our professional work—biologicals and pharmaceuticals—the things we use in our daily lives—gasoline, clothing, food, electricity—these things are not bought with money alone. They may also be bought by the health of those making them.

Industry, gentlemen, has an economic interest in *curing* these conditions. It has an even greater interest in *preventing* their occurrence in the first place—and here lies a basic function of the industrial physician—*preventive medicine.*

Prevention, in industrial medicine, requires knowledge of a highly technical nature, knowledge not only of medicine, but of engineering, chemistry, physiology, physics and other fields. Not many physicians possess the breadth of interest to encompass these fields. Not many physicians will subordinate their clinical interest in the individual patient to a technical problem related potentially to a large group of patients. This the industrial physician is required to do.

Prevention, however, is not the whole story. In addition to medical problems, industry poses others, which, while not medical in nature, are nevertheless important in the administration of a health program in history. For example, the physician in charge of an industrial health department must also be an executive. He has a department to operate, personnel to hire (and fire, if need be), a budget to prepare and to live on, equipment and supplies to purchase, accurate and complete records to maintain. He must be able to hold his own on a level with other executives in matters of general company concern.

As Director of the Medical Department he has additional and special responsibilities. He assists in the formulation of medical personnel policies—sick pay, health insurance plans; he plays an active part in job placement and in accident prevention. In isolated areas, he is called upon to advise on problems of housing, water supply, sewage disposal, food supplies and preparation, and the prevention and control of communicable disease.

A basic responsibility, of course, is the care and handling of the injured worker, from the immediate first aid, through curative surgery, medical rehabilitation, and, most important for the individual, *re*-employment in a job commensurate with the worker's disability. In such cases, of course, the industrial physician calls freely upon the services of his colleagues in the other specialties, but basically the responsibility for the patient's progress and eventual occupational rehabilitation is his.

The demands made of the physician by industry seem great, yet even these are not all. In order to improve employee health and thus decrease absenteeism, the industrial physician must initiate an active health educational program, to teach employees how to prevent colds, the importance of proper diet, the necessity for routine health examinations, and so on. He is expected to organize and train *first aid teams* among the employees. As a result of the present world situation the industrial physician now plays a vital part in company defense planning against atomic attack. Certainly, he must have an adequate knowledge of Workmen's Compensation legislation. He must establish and maintain a complete system of medical records.

The industrial physician must be impartial and unbiased. He must base his decisions upon truth and equity, rather than on pressure from management or the union. He must be a diplomat par excellence. He must be a psychologist. He must be gregarious and like people.

These, in a rough and incomplete way, are the "musts" for the industrial physician. It is obvious, I think, that no single one of our regularly recognized specialists—be he surgeon, dermatologist or ophthalmologist—can handle this vast variety of problems. The demands of industry have created this new type of specialist, the industrial physician. He is, to begin with, a capable all-around physician. He has an unusually wide breadth of interests, and has had both didactic and in-plant training in industrial medical problems. He must have a scientific and orderly mind, an inquiring nature, a dogged determination to find a cause, and the tenacity of purpose to achieve a solution. He must have a knowledge of production problems, an appreciation of the responsibilities of management, yet be able to visualize and understand the problems of the worker. He must maintain a high degree of respect from his medical colleagues, respect not only for his professional skill, but for his ethical conduct and his willingness to cooperate in every way with the private practitioner. He must, through his activities, be able to show the other members of the profession that in the industrial physician they have a friend and an ally, not a competitor.

This, then, is industry's challenge to medicine. It is a tremendous challenge, yet one which the medical profession *must accept*.

Man, as an agent of production, is the *greatest of our resources* in this industrial civilization. It follows logically that the best investment society can make is *in those human resources,* and their conservation and development. The industrial physician applies the art and science of medicine in such a way as to make the greatest possible contribution to that conservation and development. *This* is our answer to industry's challenge to medicine.

127 Edward Street

Discussion

Dr. L. C. McGee: (Wilmington) After listening to Dr. Bresler's outline of what is required of the physician serving the patient in industry, I think most of us would have to think that we are mis-cast in that we are utterly unable to approximate all of those qualities.

In the capitalistic system we find reference here and there to the "profit motive." Possibly it is unfortunate that the profit motive has been handled as it has. If industry is to provide things for better living and better things for more people, it is obvious that industry must continue to exist in a financial way in order to produce those things, and the profit motive there has a similar or the same relationship that it has to the physician in practice or to the hospital. If the hospital can not make ends meet, it must close its doors and no longer render service to the patients. If physicians can't maintain their car, their office, and get the books and other items required beyond the necessities of food and clothing, he can no longer serve his patients. It is quite true that the application of medicine to industry requires not only all the disciplines we know in medicine, but many of the scientific disciplines outside of medicine.

The challenge to the industrial profession is protection. The record of our entire profession is that we find the best solution to disease when we can prevent it. Many physicians here today can recall the hours and hours spent in treating scarlet fever in Delaware. That was solved by prevention. It required the techniques of the bacteriologist, the contributions of the water and milk chemists and knowledge of personal sanitation and many other things added together for us to bring under control this particular disease. It is highly desirable if I were at the scene of an automobile accident and there is a fractured pelvis to deal with that I have the technical know-how to help me. But I would much prefer—and I believe you agree—that the ultimate solution of the highway accident problem would be that of prevention; adequate roads, drivers and vehicles, so that the repair jobs would become less necessary.

As we looked at the slides that were presented, I, personally was not aware of the highly sensitizing qualities of the streptomycins in contact with the skin. Probably some unrecognized cases of dermatitis may have been due to the handling of streptomycin and we should keep that in mind.

The evidence of sensitization to light from the new types of fluorescence is of interest in view of the spectral characteristics of such light, and I wonder if those patients are not photosensitive, akin to those patients that can't stand much sunlight. It would be interesting to know whether Dr. Bresler made observations of photosensitivity to other types of light, both natural as well as artificial.

The reason the emphasis has been placed on the challenge which industry presents to us may be seen, I think, in or from the peculiar demands placed upon professional medicine from our industrial civilization. There are certain things we didn't ask for that we are given to do. Yet we cannot avoid them. I am quite sure that we never asked for the chore of recording births and deaths, yet early civilization must have recognized there was need for such information, and the logical person to take care of that was the doctor. Many are the things which we have had to do without necessarily wishing to do those things. But we have recognized those things and accepted the fact that we are in better position to do them by virtue of our training and experience than are the other citizens in our civilization.

And the same is true of industrial problems. I can only take but one example—that is, the matter of job placement. These fellow citizens of ours are entitled to earn their bread and butter. Some mechanisms of feeding them must be found. It is better that we have the ability to place those people in jobs where they are not going to suffer from dermatitis—and who is in better position to understand the type of placement required than is the physician?—because he must know some of the mechanism of the disorder, the dermatitis, or whatever it be. Therefore is the combination of mind and heart and hand of the physician better capable of handling these many problems, some of which are medical, some of which are personal relations, some of which deal with man as an animal. So long, then, as the requirements of these people are found in the medical profession, we will have the demand for our services in these services, just as we have the demand for our services in many other fields.

Dr. A. J. Fleming: (Wilmington) I couldn't help think, as I listened to Dr. Bresler's description of the industrial physician, that maybe we are a grossly underpaid lot, if we are supposed to have all those qualifications.

Time is getting on, and I will confine myself to three aspects of the matter of industrial medicine under discussion.

Dr. Bresler did not exaggerate one particular point, that is, the absolute necessity for the industrial physician is, No. 1, to be full-time at the job, because to do the job properly the industrial physician in charge of the plant must thoroughly know the operations throughout that plant if he is to adequately give preventive medical care to the people under his guidance.

I am sure that Dr. Foulger and his staff at Haskell Laboratory not only has the knowledge of one plant but 70 to 80 plants throughout the country, as well as several hundred operations which are involved in those plants, in order to adequately give advice on toxicology and other industrial medical matters to the medical staff throughout the country.

One minor point on which I would appeal to the members at large here is the problem of taking a little more realistic an attitude toward convalescent periods. It has always been somewhat of a mystery to me why in the non-complicated appendectomy the physician kicks the patient out of bed in two or three days and sends him home, and then has the affrontery to say: "I think you had better take three or four weeks off the job."

I have one other phase that follows on Dr. Cline's remarks last night: It is definitely part of the industrial physician's duty in his position in medicine to scrutinize proposed laws pertaining to medicine, especially in industry. Already, in Rhode Island and Michigan they have rather ill-conceived and more or less unworkable laws concerning medical service in industry, and an attempt has been made to submit such a law in Pennsylvania. Those laws in Rhode Island and Michigan were pushed through very much in the quiet, without the medical profession really being aware of them until they were on the books. An important feature of proposed legislation of this type is that medical installations in industry are to be put under the administration of the Department of Labor. Now you can underline that statement, for it appears that under this form of socialism that the department of health in the average state is to have little or no say in medical matters, and certainly as pertaining to industry.

If you think for a minute that the dubious characters in Washington that have been working to establish socialized medicine are dormant, examine carefully such state legislation pertaining to medicine in industry, and you will see that a cleancut attempt is being made to push socialized medicine in the back door on a state-by-state basis; and if such laws were to become general it would involve a tremendous number of our physicians throughout the country who do full-time industrial work or even part-time industrial work.

Under such laws what would happen, of course, is that the bulk of the physicians and control of industrial medicine would be put under the Department of Labor, and I suppose as an outcome, physicians, like other people loosely associated, would be unionized. The unionization of physicians and surgeons! And I can easily visualize that under that setup we would in ten or fifteen years be seeing jurisdictional rows between the physicians of the A. F. of L. and the CIO physicians over who should treat a fracture of tibia!

So, it behooves us to be alert to this type of industrialization; it was through the work of groups working with industry against that very obnoxious bill presented to the Pennsylvania State Legislature that the bill was effectively killed.

Dr. Bresler: The problem of photosensitivity that Dr. McGee mentioned brought up another qualification of the industrial physician that I did not mention; that is, in many cases he must also be a "detective."

This very innocuous dermatitis gave us no end of trouble. We first heard about it when several of the girls in the Biology Department came to the dispensary complaining of the dermatitis that they noticed only when they worked in one particular room. We noted that it appeared on Tuesday and lasted all week; then disappeared over the weekend. By Monday night it was back again. It was a peculiar history.

Our first thought was the possibility of sensitization from one of the numerous sensitizing substances they were working with—biologicals, liver extracts, penicillin extracts, and so forth—but the big problem was that they handled these same things in other rooms and the dermatitis didn't appear anywhere else but in the one particular room.

When we examined the dermatitis clinically it resembled plain, ordinary sunburn. We knew that each of the rooms had what we call safety-lights—ultraviolet lighting over each of the windows and door, technically supposed to have guards on, and theoretically there could not be eposure to the ray of the ultraviolet lights. However, to play safe we ordered the lights shut off entirely for two weeks. In spite of that, the dermatitis continued.

We then thought there is just a bare possibility that the dermatitis might be due to sensitivity to ozone. But the cutting off of the ultraviolet lights eliminated the ozone, as well. But we thought that since the room was air-conditioned there might be a spark gap somewhere.

We then switched our girls around, putting some of them in another room where they handled exactly the same thing. The girls that remained in the "mystery room" continued to get the dermatitis; the others didn't.

We finally sat down and piece by piece itemized every single bit of equipment in the affected room and in the other rooms where the girls were working. We found equipment-wise they were exactly alike. The only difference was the work table of the affected room was illuminated by fluorescent light and in the other room by incandescent light.

In all fairness to the manufacturers of fluorescent equipment, these people had an unusual exposure—they were in direct contact with the fluorescent light at a distance of not more than eight or nine inches, for as long as eight hours a day, five days a week. It seemed rather far-fetched that the minute amounts of ultraviolet given out by the fluorescent tube could be giving the dermatitis.

We constructed a simple plate-glass shield to completely surround the fluorescent tube on one of the two work tables in that room and found, to our delight that the girls working on that particular table no longer had the dermatitis. We kept them working on the table for a week. The girls on the other table had the dermatitis. These over here, as I say, did not. Then we switched the other girls around and found the original girls got the dermatitis, and proved to our own satisfaction that under certain special conditions —and I must insist again, ordinary fluorescent lighting will give no trouble—under certain highly specialized conditions of exposure, these types of dermatitis could occur. But it took much wracking of our brain before we found that out.

RETROLENTAL FIBROPLASIA*

P. Robb McDonald, M. D.,**
Philadelphia, Pa.

Retrolental fibroplasia is a comparatively new disease of premature infants and is the most important cause of blindness in young children. The syndrome was first defined by Terry[1] to describe what he thought was an opaque tissue that developed behind the lens. He noted that the eyeballs were small, the anterior chambers shallow, and that the irides retained their foetal blue color. He also noted that posterior synechiae developed, though if the pupils could be dilated the ciliary processes could be seen like the teeth of a comb in the extreme periphery. The retrolental membrane may only involve one portion of the retrolental space or it may be limited to the periphery, causing a localized detachment of the retina.

Terry felt that the disease was due to embryonic tissue, which developed in a meshwork of a persistence of the tunica vasculosa and that it developed after birth. Recent[2] studies have shown that primarily the disease is confined to the retina and only secondarily involves the vitreous. Histologic sections of the retina show marked dilatation of the retinal vessels with abnormal capillary budding and proliferation of both endothelial and glial cells. At this stage retinal hemorrhage usually occurs. This may be followed by organization of the hemorrhage in the vitreous leading to partial or complete detachment of the retina.[3] The term retrolental fibroplasia is really a misnomer and applies only to those cases with a complete retrolental membrane. Heath[4] has suggested the

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term retinopathy of prematurity, which is really more appropriate.

Though we know little if anything about the etiology of the disease it can be stated that the incidence of the disease has increased materially during the past decade. It has increased out of all proportion to the increased survival of premature infants, so cannot be ascribed to that factor. The incidence of the disease varies considerably in different localities, though few institutions have published the results of routine periodic ophthalmoscopic examinations of all premature infants.

Etiology

Kinsey and Zacharias[5] reviewed all the reported statistics in 1949 relative to the incidence of retrolental fibroplasia. Their report emphasized the previously known fact, that the disease is more prevalent in premature infants weighing 3 lbs. or less and that anywhere from 12-25% of this group developed retrolental fibroplasia. They investigated the parity, age of mother, Rh type, type of delivery, anesthetic agent, cause of prematurity, single or multiple births, sex of the infant and other miscellaneous factors. Their most promising lead was that the incidence of the disease correlated with certain changes in treatment, i.e. the use of vitamin supplements in water miscible form and the increased use of iron.

Exline and Harrington[6] have recently reported on the incidence of retrolental fibroplasia at the Charity Hospital of Louisiana at New Orleans. No cases of retrolental fibroplasia were found in 80 infants weighing less than 1500 grams at birth. The children were all followed and examined after the age of 7 months. Their cases were analyzed in the same manner as those of Kinsey and Zacharias in an attempt to discover how the clinical management of these infants differed from that in areas with a high incidence of retrolental fibroplasia. No single cause was found, though suspicion as to etiology was directed at high potency water soluble multiple vitamin preparations, liberal iron supplementation or excessive neonatal weight loss.

Unsworth[7] has suggested that the anemia of prematurity might be a factor in etiology. The Owens[8] felt that retrolental fibroplasia might be due to a deficiency of vitamin E. They based their thesis on the following premise: (1) Premature infants have a defective fat absorption so a low fat diet is usually prescribed. The child is usually given vitamin supplements, but E is not included. (2) That vitamin A and iron increase the requirements of vitamin E. (3) The pharmacologic action of vitamin E as an antioxidant could have a beneficial influence on the metabolism of the retina.

Reese[9] has made an interesting observation on the occurrence of skin hemangiomas in patients with retrolental fibroplasia. Skin hemangiomas are found in 3-10% of premature infants, but in those with retrolental fibroplasia the incidence was 15%. He also noted that 80% of skin hemangiomas make their first appearance between the first and sixth weeks of postnatal life. This development of the angiomatous process parallels to some extent the development of the angiomatous process in the retina.

Clinical Course

The Owens[10] deserve credit for first describing the clinical course of the disease. They started examining all premature infants at the Johns Hopkins Hospital in July, 1945. In order to examine these infants their pupils should be well dilated and they should be adequately restrained. General anesthesia is unnecessary. Two drops of a mixture of 4% homatropine and 1% paredrine in each eye usually provides maximal dilatation. At birth one usually sees some evidence of a pupillary membrane and there may be some evidence of remnants of the hyaloid system. The vitreous is usually hazy, especially in the periphery and may obscure a good view of the fundus. This haze may also be caused by a thick mucus-like precorneal film[11] The nerve head appears pale. The vessels at birth appear normal or slightly attenuated. After 2-3 weeks the vitreous haze clears and the retinal vessels frequently become dilated, especially the veins. Peripheral greying of the retina is also noted.

No cases of retrolental fibroplasia have been noted at birth. The fundus changes of impending retrolental fibroplasia are usually first appreciated between the third and sixth week after birth. They consist of marked dilatation and tortuosity of both arteries and veins. There is peripheral greying and elevation of the retina, as well as the occurrence of retinal hemorrhages. This is known as the acute stage of the disease. It has been noted by some in 50% of prematures weighing less than 3 lbs. at birth. Fortunately regression is common and only about 12% show evidence of the cicatricial phase. If during the acute stage neovascularization and transudation are noted in the periphery spontaneous regression is rare. When this occurs the retinal oedema usually progresses and the disc becomes blurred. The greyish mass of retinal detachment billows forward and a membrane appears to form in the retrolental space. A complete membrane may form by extension of the peripheral folds. Broad ciliary processes may be seen extending on to the membrane and numerous vessels may be present on the surface. The membrane need not be complete and at times a central funnel remains through which a red reflex is visible. In other cases there may be only peripheral detachments with cicatricial bands in the vitreous.

The disease is usually bilateral, though it may be more extensive in one eye than the other. The eye with the complete membrane is usually smaller than the one with a partial membrane. The anterior chamber is shallow and the iris is poorly developed.

From January, 1950, through July, 1951, 70 premature babies were born at the Lankenau Hospital. Of this number 60 survived. All babies weighing less than 4 pounds were examined routinely. Of the 14 babies in this category 12 showed the typical fundus changes of prematurity and in 4 the changes were considered severe enough to warrant special therapy. These infants were all followed until any suggestive ocular changes had regressed. No evidence of the cicatricial phase of retrolental fibroplasia was noted in any of this group. One child weighing 2 lbs. 15 oz. at birth was found to have spherophakia. The babies were all given multivitamin preparations in other than a water soluble form, supplemented by vitamin E and vitamin C.

Complications

The most common complication of retrolental fibroplasia is secondary glaucoma. It is usually associated with posterior synechia and a shallow or flat anterior chamber. The glaucoma can frequently be controlled with the use of miotics, though the vision is usually destroyed or reduced to light perception only. Surgery may be resorted to, though it is of little benefit, since blindness ultimately follows. Enucleation may have to be resorted to for a painful blind eye.

Treatment

The treatment of retrolental fibroplasia has up to the present time been very discouraging. The Owens[8] originally felt that the administration of vitamin E materially reduced the incidence of retrolental fibroplasia. They have subsequently modified this view,[12] though they feel that it reduces the severity of the process. This has not been confirmed by other investigators as Reese[9] and others have not found any correlation between vitamin E blood levels and the incidence or severity of the condition. Reese[13] feels that ACTH is of definite value when given in the acute stage of the disease; 20-25 mg. are given daily for 14 days. Treatment is only started if, in addition to large dilated vessels, there is beginning peripheral detachment. This is the schedule I followed at the Lankenau Hospital on the 4 babies referred to previously. It is extremely difficult to evaluate therapy in the acute stage since spontaneous regression is the rule rather than the exception. I do not feel that any conclusions can be drawn from the few cases I have seen or treated at the Lankenau Hospital. Further studies with a larger series and therapy to alternate cases must be undertaken before definite conclusions can be drawn.

In fully developed cases treatment is directed to the prevention of the complications, other therapy is of little, if any, value. King[14] recommends the use of a mydriatic 2 or 3 times a week to prevent the formation of posterior synechia. This is followed in several hours by the instillation of a miotic. Surgical removal of the retrolental membrane as suggested by Reese[9] has not met with universal approval. He has reported on 52 cases that have had surgical removal of the membrane. Of this number 27 were unchanged, 16 worse, and 8 had objective improvement, but questionable functional improvement.

Prognosis

It is obvious from the preceding discussion that the prognosis in retrolental fibroplasia is poor. Even in the acute cases with spontaneous regression high degrees of axial myopia are frequently seen. Though this is better by far than blindness it may be a severe visual handicap. King[14] in a series of 238 patients with retrolental fibroplasia reported the visual acuities in 210. Of this number 33% were totally blind, 33% had light perception, 22% could reach for objects, and 12% had 20/200 or better vision, and of this last group 5 were full term infants.

Conclusions

Retrolental fibroplasia is a hazard of premature birth. It is the greatest cause of blindness in young children today. There is considerable geographic variation in the incidence of the disease. The pathological process is primarily confined to the retina and develops after birth. Spontaneous regression fortunately is common. There is no specific therapy, though ACTH may prove to be of some value.

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Discussion

Dr. W. O. LaMotte, Jr.: (Wilmington) The paper which has just been presented is an excellent summary of the present status of this dread disease of immaturity, and I would like to take this opportunity to thank him on behalf of myself and on behalf of the Society for coming here from Philadelphia to present this material to us today.

It happens that in Wilmington we have a locality in which there has been a comparatively large incidence of this disease. In discussing this paper I shall confine my remarks to emphasizing this point by bringing to you a few local statistics.

It will be recalled that in Dr. McDonald's opening remarks he made the statement that this appears to be a comparatively new disease. That would be upheld by our experience here, in that there is no known case on record in Wilmington before 1947. The first known case was born September of that year. Since that time we have accumulated approximately 30 cases of infants who are either completely blind or so nearly so that their education will have to be planned along visually-handicapped lines.

The statistics that I will mention are derived from the premature service of the Delaware Hospital, which has the largest premature service in the state of Delaware. Of these 30 cases or so, 27 of them were from patients who had been admitted to that service. Several others have been observed, namely, 2 that I know of in Wilmington General, and 2 from down-state. Of these cases from the Delaware Hospital all were 4 pounds or under at birth with 3 exceptions, they being between 4 and 5 pounds. The over-all incidence of the disease developing in infants weighing 4 or 5 pounds at birth is 24 cases out of the total of 71 who survived the 4-year period from July 1947 to July 1951, an incidence of 33.8%. In other words, there is about one chance out of three here for an infant weighing 4 pounds or under at birth of developing this disease in a crippling form.

Of these 71 cases, 18 during this 4-year period were under 3 pounds at birth and these developed the disease for an incidence of 44.4%; the remaining 53 were between 3 and 4 pounds, of which 16 developed the disease or an incidence of 30.2%. Thus, the incidence is higher in the smaller babies, but is distinctly higher in the 3 to 4 pound birthrate than has been reported in other localities.

In the year from July, 1949 to July, 1950, following the report of the Owens', on the effectiveness of vit. E., I instituted the practice of giving all infants 4 pounds or under at birth vit. E., in these cases. These infants had plasma levels run and in all cases were considered adequate.

During that year there were 23 infants of 4 pounds or under at birth who survived, and 9 of these developed a crippling form of retrolental fibroplasia, an incidence of 49%. It was concluded, in our hands at least, that vit. E. had no effect in decreasing the incidence of the disease or in attenuating its final form.

In the year July, 1950 to July, 1951 vit. E. was not used routinely in the prophylactic sense, but the infants were simply placed on dietary regime as recommended by the Owens. During that year there were 18 infants of 4 pounds or under at birth and 7 of these have developed the disease in crippling form, an incidence of 38.8%. Three of the infants during the later year received ACTH in high doses, started in the earlier vascular phase of the disease, but at the present time no evidence is forthcoming that it has effectively influenced the end result.

Thus from year to year the incidence in Wilmington remains high. It doesn't seem to vary greatly from year to year in the years it has been seen, and has not been influenced by the therapeutic measures undertaken to date. We are thus faced in Wilmington with a community problem, when, thrust upon a community of this size there are 30-odd blind babies.

This situation has been met forcefully by the interest of the parents concerned, by local civic organizations, the Delaware Commission for the blind, and the State Legislature. We are also confronted, however, here, with a potential problem of clinical investigation of a disease which, as Dr. McDonald mentioned, is now the commonest cause of preschool blindness, and it is something that we can do only with the cooperation and the help of the obstetricians and pediatricians, for this disease certainly is a fundamental alteration of the physiology of the premature baby. I think we are about to hear something of the pediatrician's point of view in this regard.

Dr. R. O. Y. Warren: (Wilmington) Actually, I know very little about this disease, and may I paraphrase Will Rogers: "I only know what I have read in the literature," and have found out by talking to people like Dr. LaMotte about the disease. Consequently, from the standpoint of discussion, this is going to be very rambling and may or may not add anything to the picture of the disease.

The one thing that stands out about the disease is the utter confusion as to etiology, and why it appears. It is interesting to note, in looking over some of the material, that the disease has appeared principally in the larger centers. Of course cases have been reported elsewhere, but in any large incidence it has appeared principally in the larger centers.

Therefore, I would wonder, first, whether or not this disease may be missed frequently in other parts of the country and of the world. This is borne out by the fact that when this condition was drawn to the attention of people in France, they saw the disease, and in one hospital in Paris alone within a week after they started looking for it, they turned up four cases of the disease. Sweden seems to be one country where the disease does not occur.

It is also interesting to note that in New Orleans, at the Charity Hospital, Dr. McDonald's report mentioned cases down there that all seemed to come from the indigent classes. They were all fed on evaporated milk. It was suggested that perhaps it was a matter of breast milk feeding. There have been a great many cases in one of the private hospitals in New Orleans, however. You will remember in Dr. McDonald's remarks he said the disease was first described by Terry, and Terry described retrolental fibroplasia, but in the further studies of the disease by the Owens and others you will find actually it is a "retinatrophy" of prematurity, and it seems to me, as a non-ophthalmologist, that there has been little effort to grade the various forms of the disease. Hence, I would ask of myself and ask of the ophthalmologist, whether this maybe should not be done—and also would ask them if maybe this were not a new disease, but a disease that has grown in its complications, such as retrolental fibroplasia over the years, and perhaps it is a disease that we have had with us right along.

It seems that up to the time that this disease became evident, no thorough study of the premature infant had ever been attempted before, and it was felt to be a "no-man's land" of pediatrics and of ophthalmology.

My last remarks are the result of interest that was provoked in me, personally, by the report of a writer from Boston whose name I can't remember, on Anoxemia in Pregnant Mice. By taking pregnant mice up to 2500 or 3500 feet elevation they could provoke all kinds of deformities because of anoxemia that resulted from the high altitude experience. I would wonder, as a pediatrician, whether or not anoxemia hasn't got something to do with it.

I would wonder, despite the fact it is said that everything has been exhausted in studying the history of delivery, whether, if we go back far enough in the history of the mothers to find out if there had been a period of anoxemia, whether that might possibly be a factor?

That may be just wishful thinking on my part and not scientific, but I was intrigued by the results that they showed.

Also, I think anoxemia may come in because we know that one of the problems in the care of the premature infant, is to prevent anoxemia in the early months of the life, at times. Nobody seems to be agreed that this has been absolutely ruled out, that prenatal factors have no part in this disease, at all. Actually, the earliest signs, I gather from the Owens, may take place from ten to fourteen days. Somebody suggested this might simply be an incubation period from the time the baby was actually born. So, all in all, there are many interesting facets that we as pediatricians are extremely interested in. I was talking to a young resident a week or so ago of one institution, who suggested that maybe it was better to start feeding the tiny ones from the time they were born.

It is interesting to note that in some parts of the country the incidence has had marked rise and fall, and in other parts of the country, as in Wilmington, there has been a steady incidence, more or less, of the cases. It makes one feel rather hopeless trying to help these poor little infants, but I think perhaps in time, given the aid and assistance of the obstetrician and the scientist, that maybe all of us will be able to prevent this dread crippling disease.

DR. ANDREW M. GEHRET: (Wilmington) Frankly, I am wondering whether this problem shouldn't be dumped in the laps of the obstetricians, rather than the pediatrician and ophthalmologist.

As Dr. LaMotte just now stated, he cannot find record of a case of retrolental fibroplasia previous to 1947, and I know, in doing some deliveries previous to the war, I can't recall any, even though I am sure I had some premature babies. I am wondering what there is that we may be doing that might be causing this. And one of the things that just now occurred to me is the possibility of the use of demerol, even in small doses, which might coincide with Dr. Warren's theory of anoxemia. This might not be the place for it, but now I am going to ask Dr. Cutler if he will designate one of the men of his staff to meet with the obstetricians some Friday morning, to discuss the problem.

Another thing—and this I will direct to Dr. Handy. Approximately a year ago I heard an observation made by one of the nurses in the Premature Nursery that those babies who were treated with whole blood developed retrolental fibroplasia far more often than those were not so treated. Has anything been done on that?

DR. MARGARET HANDY (Wilmington): I think that has been proven not true.

DR. H. H. STROUD (Wilmington): I was just wondering about two things that I thought possibly Dr. McDonald might be able to answer. One is, that it has been believed for some time that fetal inflow doesn't carry so much oxygen in the hemoglobin as does the adult hemoglobin, and I was wondering if there were any cases of Rf in those who had received exchange transfusions. I wondered if anybody had perhaps replaced hemoglobin in the treatment of the disease. That was one question.

The second question I wanted to ask was—it hasn't been too long since Gordon and Levine suggested using low fat diets for prematures—whether there might be some relationship between the Rf and the use of half-skimmed milk mixtures.

Dr. E. M. Mayerberg (Wilmington): First I would like to ask Dr. Gehret and any other obstetricians here whether there has been any change in the prenatal care of pregnant women. I think the answer to this will be found somewhere from the period of conception right on up to the time the patient delivers. I wonder if they are giving any new drugs in the preparation of these women for the care of their child while carrying them? I know they give vitamins and calcium. But has there been any change in the technique of the prenatal care? The answer some day will be found there, somewhere, I believe.

Now, the next question is this, to the obstetrician: When children are premature, when they develop the condition, I understand it is usually somewheres in and around the sixth month. Now, are these children born spontaneously, without any previous trouble, or are these mothers in trouble from the second or third month? For instance, do they spot after the first or second or third months? Are they put to bed and permitted to stay there, or instructed to stay there until those symptoms disappear and then are they permitted to get up until they get in trouble again? And is that a continuous process in and out of bed, with this thing of hemorrhage going on, and then with the delivery at six months? Or, are these patients put to bed for three or four months and then, finally permitted to deliver at six months?

I think the answer is somewheres in between there—either prenatal care or permitting these patients who ordinarily would abort to go on. I may be hard-boiled, but I would say, if a woman was having that much trouble, if she carries the baby, well and good, but if she can't carry it she ought to lose it. Thank you, sir.

Dr. N. L. Cutler (Wilmington): I want to ask the speakers whether the statistics for this disease are following along with the increased incidence of survival of premature infants? It is my impression that it is not directly correlated in this respect.

I also would like to ask the pediatricians—it probably is primarily a question for the obstetricians, along the line Dr. Mayerberg suggested, that is, are strenuous efforts being made to prevent premature births, to prevent infants from being born prematurely?

The idea occurs to me, if no treatment is yet available, ophthalmologically, can the condition be handled by the obstetricians by perhaps some change in the care of patients, such as Dr. Mayerberg has suggested, whereby the incidence of prematurity can be reduced?

And I would like to ask Dr. LaMotte, in regard to the local incidence of premature births, whether the survival rate of prematures in Delaware has undergone a marked change. I assumed it has, since Dr. Handy has taken such an active interest in the premature clinic.

Dr. Handy: We have had one instance here of identical twins: one developed retrolental fibroplasia and the other one did not. If that is true, it doesn't seem to me we can necessarily feel that the maternal influence or anything done to the mother plays any part in the thing. I would like to know what Dr. McDonald thinks about that.

Dr. B. R. Vincent (Wilmington): Dr. Reese points out the similarity of this condition to hemangioma. He also describes a type of hemangioma that occurs in the infant around the orbit, that recedes spontaneously.

Now, in some of the retrolental cases, spontaneous recession does occur, and I have often thought of the possible good that might come of investigating these cases, histopathologically, along that line. I would like Dr. McDonald to comment upon that.

Dr. Gehret: At the present time we have in the hospital a baby which Dr. LaMotte is to see shortly. The mother came to me first as an habitual aborter. She was placed on increasing doses of stylesterol and she rigidly followed the regime. Unfortunately, she ruptured the membranes in three weeks and was delivered of a 2 lb. 12 oz. baby. She took stilesterol along with the usual medications, as the only one, therefore, in which we might get some clue.

Dr. LaMotte: The only comment I'll make is in reference to the question about relationship between the incidence of this disease and the survival rate in Wilmington. It is true that the survival rate from premature infants is greater at the present time than in former years, but it is also startlingly true that the incidence of the disease is far out of proportion to the increased survival rate. So I don't believe there is any connection whatsoever between the disease and increased survival rate.

Dr. Fantazier: How many of these patients get stilvesterol, in all these that are trying to abort, and you stop them, and they finally go on?

Dr. Gehret: I can't quote statistics.

Dr. E. F. Fantazier (Wilmington): There is one question I want to ask: Since we are dealing with the sitiologically premature infant, not come to term and nourished by the mother's blood, I wonder whether findings have been made transfusing blood from the mother that has reached the last trimester of term, in that there might be an extract in the blood that might prevent that condition or those conditions.

Instead of going to all the vitamines and hormones and whatnot, that might be the more natural process of the treatment of these children.

Dr. Warren: I would like to answer Dr. Fantazier's question. That has been done—to transfuse babies with mother's blood in the last trimester of pregnancies and has shown no effect upon the disease at all.

Now there is one thing that nobody has brought out that further confuses the issue: the disease may occur in one eye and leave the other eye perfectly free.

Dr. McDonald: I place no statistical significance on the few cases I have reported from the Lankenau Hospital. The slides that I showed, from Boston, were all of children examined carefully by the same ophthalmologist, where there was considerable yearly variation and seasonal variation, and I think Wilmington is the only one that has been reported as having a high or as high an incidence, continually. But I think the more diligent an investigator you have the more cases you will find, especially of the category retrolental fibroplasia. That is one of the main problems in the disease, I think; that is, I don't think we have decided what is the upper limits of norm, in premature babies, and when an acute retrolental fibroplasia begins.

Dr. Warren says there is considerable "confusion." I hope he didn't point his finger entirely at the ophthalmologist. We are confused, yes. We have tried to classify the disease, and Kinsey and Chisholm in their latest paper offer much the same classification that the rest did—that is, they classify the degrees in the change, what goes on, the set attrition stage, and so on.

Retrolental fibroplasia, as has been pointed out, is no respecter of the social or economic status of the parents. It is usually bilateral, although it can occur unilaterally, and most of the latter cases have occurred in full-term infants.

In answer to Dr. Stroud, as far as I know, the dietary regimen of these babies has been investigated very thoroughly and many investigators now are tranfusing children at the slightest sign of anemia. I don't know whether they have used any adult hemoglobin, however, in trying to correct this.

In answer to Dr. Vincent, investigations such as he inquired about are now available. One paper that Dr. Vincent has probably not seen, as it has not been published as yet, was presented by Friedenwald of Baltimore last spring, and in the latest issue of the Journal of Ophthalmology that is discussed pretty well. I pointed out, however, that it is essentially a disease of the retina and that hemorrhage occurs at the cicatricial phase.

THE TREATMENT OF CANCER OF THE CERVIX UTERI*

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Cancer of the cervix is an important anatomic form of cancer for many reasons. Second only to breast cancer, it is the commonest cancer of women; before the menopause it is more frequent than breast cancer. Many young women who still have children to raise develop cervix cancer: 10% of our patients were under the age of 30 years, 30% under the age of 40 years. In the early stages, most cervix cancers are curable. Finally, diagnosis is easy since the cervix can be seen as well as felt, and biopsy can be obtained without anesthesia or hospitalization of the patient.

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*From The Memorial Hospital.

Recently the vaginal smear test of Papanicolaou aids us to pick up lesions not grossly evident. This test is not to be depended upon for diagnosis, since sometimes a suspicious smear is not confirmed by biopsy and at other times an obviously cancerous lesion yields a negative smear. The Papanicoloau smear test should be confined to such patients as have no gross lesions. When a gross lesion is present, biopsy is infinitely preferable, and a negative smear test is no proof that cancer is not present.

In recent years we have treated several patients before the onset of symptoms, and a few in whom no gross lesion was visible, but the biopsy showed a very early cancer. In several such cases the Papanicoloau smear was of value in persuading us to take a biopsy from an apparently normal cervix. As the expected result of treating earlier, limited, curable lesions, there has been a steady improvement in the cure rate of cervix cancer over the last few years as will be shown below.

Source of Material

This paper is based upon a consecutive series of 355 cases, all treated personally by the author from 1935 to 1949 inclusive. During this period 130 other cases were seen, but have been excluded from this analysis for the reasons tabulated in Table 1. All cases, except a few, were treated in the Carpenter Memorial Clinic of the Memorial Hospital. It does not seem pertinent to include in this report patients who were treated elsewhere prior to their admission to the Carpenter Clinic, patients who refused the treatment offered, and patients who died of known cause other than cancer before the results of treatment could be determined. Among this latter group, the prognosis for cure of the cancer presumably was the same as that of the whole series; they can hardly be considered as successes or failures of treatment. The data tabulated in Table 1 is included in this report so that any reader wishing to recalculate the results by a different method of selection can do so.

TABLE 1

Cervix Cancer Cases Excluded from this Analysis

	35-39	40-44	45-49	Total
(1) Healed servix cancer referred for follow up examination only.	3	6	5	14
(2) Healed cervix cancer referred for care of radiation necrosis.			3	3
(3) Healed cervix cancer referred for treatment of metastatic lesions.	2	2	5	9
(4) Cancer of the cervix untreated (did not return or went elsewhere).	20	13	13	46
(5) Cancer of the cervix recurrent after prior treatment elsewhere.	16	17	4	37
(6) Cancer of the cervix, apparently cured, dying of other proven disease. (All deaths from unknown cause were assumed to be cancer deaths.)	1	7	12	20
(7) Cancer of the cervix, lost while apparently well, before 5 year observation. (Lost cases of uncertain cure are presumed to be dead of cancer).	1	0	0	1
	43	45	46	130

Included in this series are both private and service cases. The proportion of negro patients during the first 5 years was 25%, indicating a higher proportion of service than of private patients. Later it dropped to 15%, which corresponds to the relative proportion of negro patients in Delaware. (In Delaware 13% of the population is said to be negro.) The cure rate was the same for negro and white patients in this earlier series; hence, we presume that all patients received treatment of the same quality. No primary case able to report for roentgen therapy as an outpatient was refused treatment or excluded from this series.

Various complicating diseases were encountered among these cervix cancer patients including pulmonary tuberculosis, diabetes mellitus, hypertensive cardiovascular disease, and coronary thrombosis, and cancer of other organs, particularly of the breast, none of which seemed to have any significant relationship to the incidence of cervix cancer except that syphilis was found more often than could be expected in an ordinary series. A positive serologic test for syphilis was obtained in 17% of white patients during the first 10 years of this series, which is much higher than the rate of 2% reported by the Delaware State Board of Health for white females. We believe that syphilis is probably a predisposing cause of squamous cancer of the cervix.

Cancer of the cervix may develop during pregnancy, as in two of our patients, one of whom now survives over 10 years. At least 6 other patients probably had cancer at the time of delivery and delivered through a cancerous cervix, as judged from the history, but were not seen until weeks or months later. All had advanced cancer on admission, 3 with disseminated metastasis, and none survived. A recent case was found to have cervix cancer upon examination of the curettings for incomplete abortion.

Prognosis

The most important single factor affecting the prognosis of cervix cancer is the anatomic extent of the disease when the diagnosis is made. All authors who subdivide their cases by stages demonstrate this fact. The duration of symptoms is also significant, since even the apparently small cancer may metastasize or extend widely within the endocervix, where its presence cannot always be recognized, and the longer it has been present, the greater becomes the possibility of metastasis. Delivery through a cancerous cervix, as noted above, is likely to disseminate the disease. Syphilis, though a possible etiologic factor, had no effect on curability in our experience. Cancer arising in the cervical stump after hysterectomy presents some difficulty in treatment, but in this series did not significantly affect survival. Cancer of the cervical stump is relatively common. For example, in the year 1948 20% of our cervix cancer patients had had prior supracervical hysterectomy.

We could find no correlation between the pathologic grade of malignancy and either radiosensitivity or long term survival that could not be explained equally well by the anatomic extent of disease. We agree with Corscadden[1] that bulky, extensive cancer seems biologically different in its response to radiation therapy; as though it were more aggressive and more able to withstand treatment. The same observation has been made with respect to oral and pharyngeal cancer by ourselves and others.

All the cases in this series were treated by combined roentgen and radium therapy with the following exceptions: two patients with early cancer of the prolapsed uterus had vaginal hysterectomy, preceded in one case by x-ray therapy directly to the extruded cervix. One patient with early cancer and extensive pelvic inflammatory disease and tubo-ovarian abscess had a total abdominal hysterectomy. One patient with carcinoma in situ (the only case in this series) had a Sturmdorf amputation of the cervix. These surgically treated patients have all survived more than 5 years. Many patients had x-ray therapy only because slough and infection were so extensive that safe application of radium was impossible. None of these survive. A few cases had radium therapy only because of age, debilitating disease, extreme obesity and the like. Almost all patients had heavy external irradiation and vigorous radium therapy as described below.

Plan of Treatment

Once the diagnosis had been proven by biopsy, almost all patients were given x-ray therapy through two anterior and two posterior pelvic portals, giving 200 r through each of two 16 x 8 cm. semi-circular ports daily for an average of 2400 r through each of four ports in four to five weeks. (The dosage range was 2000 to 3000 r.) Variation in dosage was based chiefly on the difference in thickness of the abdominal wall of the patient and of the sagittal diameter of the pelvis. In most cases the dose delivered to the parametrial tissues was approximately 2500 rT. Radium was inserted into the cervix immediately upon completion of the roentgen therapy for a dose of approximately 4500 mg. hours. This dose was varied according to the number of points of application available. The figure reported is an average. The technique of treatment is fully described in a previous publication.[2] Preliminary x-ray therapy is advantageous since it reduces the bulk of the cancer, decreases vascularity, (bleeding usually stops in a week or two), and clears up infection, making radium insertion easier, safer, and more accurate. In our experience a contraction of the vaginal apex never results until many weeks after radium therapy. Many post-menopausal patients present themselves with a relatively contracted or rigid vaginal apex prior to any treatment. Such post-menopausal contraction is not enhanced by x-ray therapy.

End Results

The result of treatment up to five years is known in all cases except one who moved away after three years and could not be traced. Several other patients have been lost since the five year period and are presumed to be well unless proven otherwise. Practically all patients have been examined periodically; very few have been followed by mail, by telephone inquiry or through the referring physician. During the first period of this study (1935-1939), of 98 patients treated, 50 were living and well 5 years after treatment, or 51%. For the second period (1940-1944), of 110 patients treated, 60 survived in good health for 5 years, or 55%. In the third period (1945-1949), 55% of the patients treated more than 5 years ago (up to 1947) remained well, and many of the others survive without symptoms.

From our past experience with recurrent or residual cancer, it is anticipated that the final survival rate in this third period will be close to 60% five year survival. Most deaths from cervix cancer occur within the first two or three years. In general, the five year survival rate is 10% to 15% less than the three year survival rate. (Meigs[3] & Hynes[2]). Recurrent cancer after 5 year survival has been quite rare in this series. To date it is less than 5% of our cases.

Complications of Radiation Therapy

In any large series of cases, apart from the manifestations of recurrent cancer, certain complications may occur. Provided serious complications are not too frequent, one is justified in following a plan of vigorous irradiation of so lethal a disease. Frequently patients have a moderate colitis or proctitis, with or without blood in the stools. This usually subsides, but occasionally culminates in a surgical lesion of the bowel; that is, stricture or perforation. Among the 355 cases reported, there were 9 surgical lesions produced which required either temporary colostomy or resection of the bowel for relief. Many other patients had moderate to severe colitis which subsided under medical therapy without surgical treatment. Five deaths are directly attributable to irradiation, either from bowel injury or as the result of pelvic abscess following upon the exacerbation of chronic pelvic inflammatory disease. Several of the bowel complications in this series were reported by Spackman.[4]

Injury to the bladder from proper irradiation of cervix cancer is relatively rare. In this series, 4 vesico-vaginal fistulae are thought to have resulted from treatment. At least 14 other patients developed fistulae between bladder and vagina or between bowel and vagina as the result of proven uncontrolled cancer. It is well known that the natural history of untreated cancer of the cervix is the development of fistulae between vagina and neighboring organs.

Ureteral obstruction from radiation fibrosis was suspected on several occasions but always proved to be due to recurrent cancer obstructing the ureter. In this connection it should be noted that pelvic inflammatory disease occurring after heavy radiation therapy may produce a frozen pelvis indistinguishable from advanced cancerous infiltration, except that palliative measures, such as colostomy, pelvic diathermy and the like, gave complete symptomatic relief, and long term survival disproved the clinical impression of recurrent cancer. Stricture of the recto-sigmoid may occur in this inflammatory reaction to treatment. We have not yet found a case of benign ureteral stricture.

Fracture of the femur has been reported as a late result of radiation osteitis; we have never had this occur, probably because the femur is not irradiated by the technic we employ. Pelvic infection, including pyometra, parametritis, and tubo-ovarian abscess (particularly the flare up of a pre-existing salpingitis), may occur following radiation therapy. In our first series there were two deaths from pyometra which was treated by hysterectomy. Since then we have learned that conservative measures: such as, repeated dilatation, intrauterine irrigation, diathermy, and now the anti-biotics, will control such infections, except when uncontrolled cancer persists. A useful agent in the treatment of post-radiation slough and necrosis is activated zinc peroxide which releases nascent oygen for twenty-four hour period after its application as a paste or a powder, and helps to control the anerobic organisms usually present.

SURGICAL TREATMENT

To date, no published series of surgically treated patients can compare with the results obtainable by good radiation therapy. Practically all surgical reports are confined to carefully selected cases: the stage I or stage II cases that also respond very well to radiation therapy. Total abdominal hysterectomy must of necessity remove the cervix and the immediately adjacent tissues with only a narrow margin because of the proximity of bladder, ureters, rectum, and their supporting fascia, blood vessels, and nerves. For the cancer limited strictly to the cervix, either hysterectomy or radiation therapy will be effective. Once the cancer has invaded the parametrial and paracervical tissues, radiation therapy offers more adequate treatment than hysterectomy, and who can tell when such invasion has begun? Arneson[5] has demonstrated that certain cases with pelvic node metastasis are controllable by x-ray therapy, though some proponents of surgical therapy argue that only surgical treatment can cure the patient if lymph node metastasis has occurred. (In practice, few surgical cures are reported when the dissected lymph nodes are positive for metastatic cancer.)

However, we believe that there is a definite place for surgical treatment of cervix cancer; namely, the cancer which has proved itself to be resistant to irradiation treatment, or the advanced cancer which is considered not amenable to radiation therapy. Some cases in these categories we think may be curable by truly radical surgery. Total hysterectomy, as noted above, is not truly radical since so many potentially invaded tissues are preserved in the course of the operation. By radical removal of cervix cancer, we mean pelvic exenteration; that is, en bloc removal of bladder, urethra, uterus, adnexa, vagina, and rectum, with all surrounding tissues down to the endopelvic fascia, including of course the pelvic lymph nodes from the aortic bifurcation downward. The ureters may be implanted into the sigmoid colon above the colostomy left by proctectomy, or into the isolated cecum, if a cecal blader is devised, or brought out to the skin as a cutaneous ureterostomy.

So formidable an operation is justified only in desperate cases where there is no other prospect of cure or palliation. At present we are not prepared to recommend it as other than a surgical experiment, until sufficient evidence accumulates. An occasional patient has been so treated in the past four years, but no long follow-up is available. On the present evidence we think the operation has a place in the therapy of *recurrent* cervix cancer if the necessary hospital facilities and surgical skill is available. Since recurrent cervix cancer is never controllable by additional radiation therapy, radical surgical treatment is indicated in such cases.

It is too early to report the results of such radical surgery since we have had no experience with it prior to 1948. Suffice it to say that several of my associates have attempted radical cure of recurrent cervix cancer in approximately 25 cases. (The exact number is obscured by the fact that similar radical operations were performed for some other varieties of cancer.) The operative mortality has not been excessive in our opinion (less than 25%) and there are 7 survivors of pelvic exenteration who remain in moderately good health from six months to three and one-half years since operation. Obviously any definitive analysis of pelvic exenteration must await a much longer period of observation. At present it cannot be recommended for the routine treatment of cervix cancer, even though advanced or recurrent.

In general, we believe that adequate, careful, thorough, combined radiation therapy is the treatment of choice for cancer of the cervix. No doubt total hysterectomy will cure the limited cancer, if one can select that case. Irradiation will cure not only the limited cancer, but also many moderate to extensive cancers. When cancer recurs (or rather remains) after irradiation or hysterectomy, truly radical surgery may offer a chance of cure: that is, pelvic exenteration. It is our personal conviction that "radical hysterectomy," "Wertheim hysterectomy," or "hysterectomy with iliac node dissection" offers little more than total hysterectomy. If the cervix cancer is limited to the cervix, total hysterectomy will cure it; if it involves the parametrium, irradiation or pelvic exenteration may cure it.

SUMMARY

(1) Cancer of the cervix is curable in its early stages. It frequently affects young women with family responsibilities. The diagnosis is easy because the cervix is accessible to palpation and inspection and biopsy can be done in the office without anesthesia, sometimes even before symptoms appear. Papanicolaou smear tests occasionally reveal the necessity for biopsy of the apparently innocent cervix. Such tests should not be relied upon if a grossly visible lesion is present and available for biopsy.

(2) A consecutive series of cases personally treated from 1935 to 1949 is reported from the Memorial Hospital of Wilmington, Delaware. The selection of cases for the report is described and tabulated. Ward and service cases are included.

(3) The importance of early diagnosis and treatment of cervix cancer is discussed.

(4) Syphilis is considered to be a possible etiologic factor in the development of cervix cancer.

(5) The technic of combined roentgen and radium therapy is described and the results from such treatment reported.

(6) The complications of radiation therapy and their management are discussed.

(7) The role of radical surgical treatment is mentioned and our definition of truly radical surgery and the indications therefor are presented.

(8) The author concludes that combined x-ray and radium therapy is the best treatment for most cases of cancer of the cervix uteri. If the cancer is known to be limited to the uterine cervix, total hysterectomy will cure it. If its exact extent is unknown, radiation therapy offers more than surgical treatment. If the cancer of the cervix is resistant to radiation therapy (as some of them are) pelvic evisceration offers a chance of cure. Total hysterectomy seems to offer as much as the semi-radical operations proposed for the treatment of cervical cancer.

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CONTROL OF EDEMA WITH ELECTROLYTE THERAPY IN TWO CASES OF NEPHROSIS*

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For many years the management of the nephrotic syndrome has presented a serious medical problem. Regimes of various descriptions have been tried with little lasting success and these have been difficult to evaluate because of spontaneous diuresis which characterizes this condition.[1, 2, 3, 4, 5] Different authors have described therapeutic goals which should be achieved in handling these patients and all agree that cure of the basic disease process would be ideal.[6] One of the most limiting features of the disease, however, is the massive edema which occurs and often is incapacitating. Should relief of this edema with a regime which tended to inhibit its recurrence be feasible in a good number of cases it should be worthwhile since the patient whether child or adult, could then for all practical purposes lead a normal life.

It is the purpose of this paper to report two cases of the nephrotic syndrome treated with the lactate and acetate salts of sodium and potassium along with calcium lactate in amphojel. The cases comprise one adult and one child both of whom were rehabilitated.

This work was begun in order to further evaluate the extracellular and cellular electrolyte abnormalities in chronic renal disease. Recent tissues analyses in the nephrotic syndrome[7] and in advanced renal disease[8] have shown a probable cell deficit of potassium with an increase in cell chloride with a slight increase in total water and sodium. Since lactate is a precursor to bicarbonate and since it is known that excess chloride and bicarbonate presented simultaneously at the distal tubules of the dog kidney will facilitate chloride excretion, lactate was used with sodium.[9] Acetate and lactate were used because of their effect on renal enzyme transport sys-

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tems.[10, 11] Amphojel was chosen for its action on phosphates[12] and calcium was deemed necessary to protect against alkalosis, as sudden changes in the CO_2 frequently occurred.

Methods

Both cases studied were believed to be examples of severe glomerulonephritis. Since the nephrotic syndrome is often characterized by remissions certain criteria were established to determine the effect of the therapy. Baseline data besides establishing the diagnosis included several days to several weeks electrolyte excretion data for sodium, potassium, and chloride. Should the urine sodium be hypotonic continuously and change only with the administration of sodium and should the occurrence of an iso-osmotic urine occur on this regime with clearance of edema, it was felt that the electrolyte therapy was responsible. This was validated in the following studies of spontaneous diuresis which showed similar changes with no therapy. Thus both cases showed little sodium excretion initially and with near equi-osmotic sodium levels in the urine cleared edema. Since only reasonably accurate balance data was obtainable the chemical description about serum and urine determination of electrolytes correlated with weight changes and administered salts will be presented.[13] Chloride was determined by the method of Schales and Schales.[14]

Case 1. T. G. This 3½ year old white male was admitted to the hospital with a chief complaint of generalized swelling. There was no history of antecedent infection, but intermittently three months before admission the patient had puffiness of eyelids and face. Two weeks before admission anasarca was noted and a local physician found 4 + albumin uria. The child was admitted to the hospital for diagnosis and treatment. Physical examination revealed a blood pressure 170/70, pulse 110, respirations 24. There was marked edema of the eyelids and puffiness of the face with ascites and peripheral edema. Cervical nodes were palpable in the neck. Harsh rhonci were heard at the right base. The liver and spleen were palpable and there was bilateral edema of the lower extremities. The impression upon admission was the nephrotic syndrome of sub-acute glomerulonephritis.

Laboratory work throughout the hospital stay revealed a marked hypochromic anemia, urines with a maximum concentration of 1.028 with a 4 + albumin, 4-15 red cells and an occasional white cell. Total proteins were 4.97 with a 1:1 albumin globulin ratio. Maximum cholesterols were 413 mgm%. Initial serum sodium was 128 mEq/L with a potassium of 4.7 mEq/L. Serum chlorides were 105 mEq/L. The patient was treated with salt-free dextro-maltose and bed rest and began a spontaneous diuresis. After five days the spontaneous diuresis stopped and the patient was begun on 15 mEq of potassium daily. This was increased to 30 mEq within the next two days. At the peak of the spontaneous diuresis the patient's sodium concentration in the urine reached 176 mEq/L but with a low serum sodium the diuresis soon lessened with decreasing urine sodium to 38 mEq/L. Upon potassium therapy alone the patient's serum sodium gradually reached normal, but the serum potassium level fell below 4 mEq/L. The patient was then increased to 40 mEq potassium acetate daily and although no marked drop in weight occurred a fluid shift was evident with a complete disappearance of edema. The patient was then maintained on potassium therapy for the next several months, but this appeared to be unsatisfactory in the complete control of edema since puffiness of the face and especially of the abdomen was noted intermittently more frequently accompanied by infections. On potassium and calcium therapy the patient's sodium excretion of urine rose above 200 mEq. and four months after the initial admission the patient was put on one molar sodium lactate and gradually worked up to 200 mEq daily. Slight edema of the face was noted during this time, but this gradually receded and for the last nine months the patient has been well maintained on 200 mEq of sodium lactate and 125 mEq of potassium acetate daily along with 4 grams calcium lactate. During this time the patient has been edema free and has been leading a normal life. Within three months after the initiation of sodium therapy the patient's urine became negative for albumin. Thereafter because of a behavior problem the patient stopped taking his medication and gradually accumulated edema and the proteinuria returned. With rehospitalization the patient again took his medication; the edema disappeared and the patient is now completely rehabilitated at home, the urine now being albumin free.

Case 2. S. T. This 31 year old white male had been hospitalized in various naval and Veterans Administration hospitals for a 22 month period with a diagnosis of the nephrotic syndrome on the basis of chronic glomerulonephritis. The patient had fluid retention nearly all of the time with massive edema except for several diureses which occurred with intravenous albumin therapy. The fluid, however, returned promptly and the patient remained incapacitated. Frequent infections also complicated the picture. Baseline data was begun 11-10-51. The patient was excreting a hypotonic urine clearing about 30 mEq of sodium daily. He was then begun on what was thought to be one molar sodium lactate with increasing doses up to 160 mEq per day with 20 mEq one molar potassium acetate and 8 grams of Calcium lactate in amphojel (10% solution) daily. Initially the urine concentration of sodium came up to 100 mEq/L, but within a matter of days dropped back to 40-50 mEq/L. During this time the patient lost several pounds but fluid retention again occurred and the patient gained about 10 pounds of weight on therapy. The medication was discontinued and it was later found that the sodium lactate was other than one molar. The patient in the meantime received several transfusions and on continuous potassium therapy and bed rest lost all of his edema except about 8 lbs. He was then discharged on 100 mEq potassium acetate, much improved clinically. He was followed at weekly intervals and in April, 1952 was begun on increased doses of one molar sodium lactate until a maximum dose of 200 mEq was obtained. This time the patient responded very favorably and the urine concentration of sodium has gradually come up to an equi-osmotic with a disappearance of all edema except very slight intermittent puffiness of the left eye. The patient is now and has been for the past several months on unlimited activity.

Discussion

In 1948 Fox published a detailed description of serum and urine electrolyte changes in nephrosis treated with the combined salts of sodium and potassium acetate.[15] He was able to show that in the edematous phase of the disease there was a lowered serum sodium and that the urine was hypotonic for sodium. He suspected then a cell deficit of potassium and later further clarified it with his tissue analyses.[7] Marked negative chloride outputs were suspected in his series and these often preceded a diuresis and clinical improvement. Potassium uptakes were common. The rationale for his therapy was the lowered extracellular osmotic pressure as reflected by the low serum sodium and the cell cation deficit as indicated by the positive potassium uptakes. Precursors to bicarbonates were chosen because of the work of Pitts who demonstrated that excess chloride and bicarbonate in the damaged renal tubules of a dog would result in improved chloride excretion.[9] Fox reasoned that if sodium were given the serum level would eventually be raised, although preceded by a drop in this level, and in the hematocrit, indicating a withdrawal of fluid from the cellular compartment. Should the extracellular osmotic pressure be raised the ionic equilibrium could be reestablished and therefore renal function improved.[16] With a larger load of sodium as lactate a closer to an iso-osmotic urine for sodium could be forced and a more psysiological situation reached.[17] He contended that this could not be done without the replacement of the cell cation deficit of potassium as added sodium may well migrate intracellular to replace this loss.[18] With this method he was able to mobilize the fluid in most of his cases, and with the continued administration of the salts, he was able to prevent a recurrence of edema, thus allowing these children to lead essentially normal lives.

In the first case presented an equi-osmotic urine was accompanied by a spontaneous diuresis but when the serum sodium remained at 129 mEq/L the urine sodium also dropped to a low of 13 mEq/L. At this point a fluid retention phase again occurred, but with the administration of potassium acetate and calcium lactate the urine sodium then rose to a high of 190 mEq/L. As Fox predicted throughout the phases of diureses the urine chloride values were high, at times reaching 200 mEq/L. In the follow-up during the past year, particularly before sodium was administered intercurrent infections produced slight puffiness of the face. This was correlated with a diminution of urine sodium excretion and decreased urinary output. When the patient was finally worked up to full doses of sodium lactate intercurrent infections produced much less edema and urine sodium did not change.

In the second case presented it is of note that the patient had edema with a normal serum sodium (ranging from 136-143 mEq/L over the first week). The serum potassium was low normal during this period being below 4 mEq/L and the serum chlorides were 110 mEq/L. Initially before therapy the urine sodiums fell to a low of 11 mEq/L, but the urine output remained adequate being above 2 liters in 24 hours. After the patient gained edema during the first attempt at therapy the serum sodium fell to 129 mEq/L and the serum chlorides fell to 95 mEq/L. Urine chlorides excreted in this case remained low for over a five months period and recently have returned to normal of about 150 mEq in a 24 hour period with an intake of an average of 45 mEq in 24 hours. Recently the urine sodium values have been between 126 and 154 mEq/L. The CO^2 at one time reached a peak of 35 mEq/L, but is at present normal, as is the entire structure of the extracellular fluid in regard to described electrolytes.

Summary

Two cases of the nephrotic syndrome, one adult and one child, were treated with the alkaline salts of sodium, potassium and calcium. On the administration of these salts the urine sodium reached an equi-osmotic level and a diuresis was achieved. In the child albuminuria has disappeared. It is felt that this type of therapy may be quite beneficial in the handling of certain patients with the nephrotic syndrome.

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MEDICAL SOCIETY OF DELAWARE

Amendment Adopted

BY-LAWS

The following Amendment for the booklet of By-Laws of the Medical Society of Delaware was adopted by the House of Delegates on September 8, 1952. Each member should paste this new Amendment in his copy of the By-Laws.

Page 10, New Amendment to Article 3, Section 6—Dues and Assessments. Active members of this Society who retire from practice before the age of seventy and who derive no part of their income from the practice of medicine shall be excused from the payment of annual dues or special assessments of this Society, provided they are similarly excused from the payment of dues and assessments of their component county society.

In order that our retired members may receive the benefits of this new Amendment the three County Societies should promptly adopt a similar Amendment and file a copy of same with the Executive Secretary.

+ *Editorials* +

DELAWARE STATE MEDICAL JOURNAL

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VOL. 24 OCTOBER, 1952 No. 10

NEW PUBLICATION DATE

Ever since the New Series of *The Journal* began in 1929 the publication date has been the twenty-fifth of the current month. Now, at the request of the State Journal Advertising Bureau, The American Medical Association's department that procures national advertising for the state journals, it will be advanced to the fifteenth of the current month. This will make the Delaware *Journal* conform more closely to the schedule already in use by most of the state journals, will make the national program of the various advertisers more uniform, and will obviate the receipt of *The Journal* after the current month, which has happened occasionally, due to unpreventable delays.

Accordingly, all material intended for publication in a given issue must be in the hands of the Editor on or before the tenth of the previous month, instead of the twentieth. We hope our confreres and friends will bear this in mind and help us make this transition as promptly and as painlessly as possible. Our thanks in advance.

DID YOU KNOW?

A majority of the active, private physicians in the United States belong to the Republican party. Republican doctors, in fact, outnumber Democratic doctors by almost 2.5 to 1.

This is revealed in the current (October) issue of *Medical Economics*, national business magazine for physicians. The magazine is publishing the results of a nationwide survey of medical practice, based on a questionnaire sent to each of its 134,000 M.D. readers.

About 54 per cent of the doctors surveyed said they were Republicans; 22 per cent said they were Democrats; the remaining 24 per cent classified themselves as independents. Less than 1 per cent specified affiliation with minor parties.

Republican physicians, *Medical Economics* says, are apparently most prevalent in the Central and Northwest sections, where they outnumber Democrats by more than 6 to 1. Even in the so-called "solid" Southeast, only half call themselves Democrats. A listing of doctors' politics by region follows:

	Republicans	Democrats	Independents
New England	53%	11%	36%
Middle East	49	23	28
Southeast	21	50	28
Southwest	34	34	31
Central	68	11	22
Northwest	73	12	14
Far West	71	15	14
All U. S.	54	22	24

(Sets of figures do not always equal 100 per cent because of rounding.)

According to the survey, Republican tendencies are strongest among eye, ear, nose, and throat specialists (6.2 Republicans per Democrat), least strong among dermatologists and among psychiatrists and neuro-psychiatrists (1.5 Republicans per Democrat). Half the psychiatrists, incidentally, consider themselves independent politically.

Doctors' political views vary considerably according to income, the magazine has discovered. Among physicians who net in the neighborhood of $5,000 a year, there are two Republicans for every Democrat. Among those netting around $30,000 a year, there are four Republicans per Democrat.

In towns of under 5,000, Republican medical men outnumber Democrats 2.8 to 1. They hold only a 1.3-to-1 edge in cities of over a million.

LIBRARY OF THE

DELAWARE ACADEMY OF MEDICINE

The Library of the Delaware Academy of Medicine serves the medical and dental professions in the following ways:

Information Service. This service is usually by telephone, such as an address of a doctor, medical school, or checking on reference in an index, etc.

Reference Service. This service includes selecting from the Library collections the material needed for information on some subject, or for the preparation of a paper, or for the reporting of an interesting case. For this service it is not necessary to furnish the Library with any references, only to indicate the subject.

Bibliographic Service. This service includes the compilation of bibliographies for any phase of a subject or for any period of years. Bibliographies of some interesting or rare subjects are kept on file and are brought up to date from time to time as the need arises.

Special Interest Service. Upon request of a member all current periodicals as they are received are checked for articles in whatever field he may be interested, and is notified when an article on given subject is published.

The above services given in this Library are worthy of mention, since this is a field omitted in many of the larger libraries, the readers being required to gather all their own references.

It should be also noted that material is being sent free of charge to all members residing outside New Castle County.

All material not included in the Library collections can be obtained through interlibrary loan from other libraries. Such material can be secured either in original or photostatic copy, depending on the member's preference. Such material, where the cost of the photostatic copy is less than $1.50, or is material published in the current year, can not be secured in the original form. All photostatic copies become the property of the respective members.

The Library is opened to all physicians, dentists, residents, and interns, but only members of the Academy are allowed to take material out of the Library.

Library hours: Daily 10 a.m. to 5 p.m.; closed Saturdays and Sundays. Open on evenings of meetings; consult the librarian for exact evening hours. Telephone 2-2413.

DELAWARE ACADEMY OF GENERAL PRACTICE

All physicians are invited to attend the First Annual Scientific Session, Saturday, December 6, 1952, at the Delaware Academy of Medicine, Lovering Avenue at Union Street, Wilmington. There is no registration fee.

Program

9:00 a.m. General Assembly for the Transaction of Delaware Academy Business.

10:30 a.m. O. Spurgeon English, M. D., Professor of Psychiatry, Temple University—"The Relation of Good Parental Care to the Prevention of Psychosomatic Illness."

12:00 Noon—Luncheon. Subscription $1.50.

1:30 p.m. Louis Krause, M. D., Professor of Medicine, University of Maryland—"Medicine and the Bible."

2:45 p.m. Julius Pomeranze, M. D., Clinical Assistant in Medicine, New York Medical College — "Diagnosis and Treatment of Atherosclerosis."

4:00 p.m. Philip Thorek, M. D., Clinical Assistant Professor of Surgery, University of Illinois, College of Medicine—"The Acute Abdomen."

5:15 p.m. Film, "Tele-Clinic of the 1952 Scientific Session of the A. A. G. P." Courtesy of Wyeth, Incorporated.

7:00 p.m. Cocktails and Annual Banquet, Kent Manor Inn. Subscription $15.00 per couple.

Guest Speaker—R. B. Robins, M. D., President of the A. A. G. P.

Installation of Officers for 1953.

Special program planned for your ladies.

There were 92 per cent more fatal accidents on icy roads last year than in 1950.

Three out of four motor vehicles involved in 1951 accidents were passenger cars.

OBITUARY

Aubray C. Smoot, M. D.

Dr. Aubray C. Smoot, of Georgetown, died suddenly on August 16, 1952, following a heart attack.

Dr. Smoot, a practicing physician in Georgetown since 1930, was the son of the late Rev. Truston C. Smoot and Fannie Griffith Smoot. He was born in Felton in 1898 while his father was serving as pastor of the Methodist Church there.

After graduating from Western Maryland College where he received his bachelor's degree, Dr. Smoot taught in the prep school there for several years. He majored in pharmacy in the Philadelphia College of Pharmacy, then entered the University of Maryland Medical School, graduating with an M.D. degree in 1928.

For two years before coming to Georgetown, he was associated with Dr. Julius Friendenwald, a Baltimore stomach specialist. A member of Nanticoke Lodge 172, F&M of Federalsburg, Md., and of Hope Chapter 7, Royal Arch Masons, of Georgetown, Dr. Smoot was an active member of Wesley Methodist Church in Georgetown and was a member of Sussex Post 8, American Legion.

A World War I veteran, Dr. Smoot was president of the Georgetown Special School District for three years and was physician of the Sussex County Prison since 1934. One of the oldest members of the Indian River Yacht Club, Dr. Smoot was commodore for the club for the 1949-50 year. He was a former member of the Georgetown Kiwanis Club.

He is survived by his wife, the former Eleanor Virginia Norris; two sons, Dr. Aubray C. Smoot, Jr., an intern in the Delaware Hospital in Wilmington, and Lt. (jg) William Norris Smoot, aboard the aircraft carrier USS Princeton in the Pacific; two brothers, Dr. Merrill C. Smoot of Hagerstown, Md., and Ralph Smoot of Fordyce, Ark.

Funeral services were held on August 19, 1952, with burial at Denton, Md.

How Many Voted Recently?

Australia	96 per cent
Belgium	90 per cent
Italy	89 per cent
Great Britain	82 per cent
Sweden	80 per cent
France	75 per cent
Canada	74 per cent
Israel	72 per cent
Japan	70 per cent
United States	51 per cent

Now Will You Vote?

New York, October 2 (INS)—The Greek's had a word for it!

The word was "idiotes," meaning citizens who did not take part in public voting. The English "Idiot" stems from it.

THE ONLY WAY TO HAVE
GOVERNMENT BY THE PEOPLE

Is to Have
VOTING BY THE PEOPLE!

BOOK REVIEWS

Bacitracin—A Review and Digest of the Literature Up to and Including January, 1952. Cloth. Pp. 127. New York; Research Division, S. B. Penick & Company, 1952.

The purpose of this book is to make available for use by the pharmaceutical industry a review of the data which have accumulated on the clinical usefulness of bacitracin and to direct attention to the wide potential of this drug based upon its known synergistic action with other antibiotics.

The wide publicity and distribution of the generally accepted antibiotics has given little incentive to the physician to investigate the outstanding effectiveness of bacitracin in pyogenic skin infections, open wounds, eye infections, nasal infections, acute and chronic amebiasis, dysentery, and widespread systemic staphylococcic and certain streptococcic and pneumococci infections.

A complete bibliography is given.

Clinical Heart Disease. By Samuel A. Levine, M.D., Clinical Professor of Medicine, Harvard Medical School. 4th edition. Pp. 556, with 192 figures. Cloth. Price $7.75 Philadelphia: W. B. Saunders Company 1951.

Without losing the charm of previous editions, this excellent text has been brought up to date. Anticoagulants, advances in the evaluation and treatment of congenital heart disease, and the role of cardiac surgery are given proper emphasis. Almost two hundred pages are devoted to a complete revision of the discussion of electrocardiography, including unipolar and precordial leads. Finally, a few pages are devoted to phonocardiography.

As important as are the advances in technical knowledge, these are perhaps overshadowed by the personal observations and practical teachings of the author. The chapters on rheumatic fever, angina pectoris and coronary thrombosis, and hypertensive heart disease and arteriosclerosis merit the attention of all physicians.

Since the work is based upon the author's life-long observations, together with those of his many friends who are leaders in the field of cardiology, a bibliography is neither necessary nor desirable.

The publishers are to be commended upon the continued excellence of their art.

Principles of Refraction. By Sylvester Judd Beach, M.D., Chief Ophthalmologist, Portland (Maine) City Hospital; Past President, American Ophthalmological Society. Pp. 158. Cloth. Price, $4.00 St. Louis: C. V. Mosby Company, 1952.

Knowing the interest and enthusiasm Dr. Beach has had in refraction it has been a pleasure to read his book. His novel way of presenting his ideas makes the reading fascinating and illuminating. Who else, Dr. Lancaster asks in his introduction, would have thought of illustrating and driving home the problems of image formation of cylindrical lenses and the way astigmatic eyes see things by the homely example of a glass of water for a cylinder and the window bars as test objects?

Refraction as pointed out by Beach is the deflection from its path of a ray of light on passing from a medium like air to one of different density such as glass. Since we are able to fit lenses to remedy the deviation of the optical system of the eye from standard, the name refraction has been made to include the examination of eyes for glasses.

Ocular Neurosis, the final chapter, with case histories and actual treatments, is a valuable contribution toward understanding and treating psychosomatic patients who come with eye complaints.

Dr. Beach has the ability to convey his thoughts to others and in plain and understanding language makes the subject matter clear.

Diagnostic Bacteriology. By Isabelle G. Schaub, A.B., and M. Kathleen Foley, M.A. Fourth Edition. Cloth. Pp. 356. Price, $4.50. St. Louis: C. V. Mosby Company, 1952.

This is an up-to-date presentation of practical methods for the isolation and identification of pathogenic bacteria. With the development of antibiotics and antibacterial chemotherapeutic agents, it is imperative for the physician to know what type of organism he is dealing with before the proper drug is selected.

The book discusses Bacteriological Methods and Diagnosis, Determination of the Sensitivity of Bacteria to Antibiotics, Serologic Diagnosis, Media, Stains and Staining Techniques, Reagents and Tests. A complete subject index ends the book.

It may be used in liberal arts colleges and universities as a text in undergraduate courses in medical bacteriology, in the highly specialized courses offered by the various schools training laboratory technicians, and at the graduate level in professional schools.

This book is printed on good paper, with easily read type.

Medical Aspects of Civil Defense. Sponsored by the Council on National Emergency Medical Service of the A.M.A. Paper. Pp. 130. Price 25 cents. Chicago; A.M.A., 1952.

These ten articles which have appeared in J.A.M.A., have now been reproduced in booklet form. These articles are of genuine interest to the medical profession and the general public, and we are, therefore, interested in publicizing its availability as widely as possible.

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THERAPEUTIC GOALS IN THE NEPHROTIC SYNDROME*

LEE E. FARR, M. D.**
Upton, N. Y.

With the development of clinical methods for physiological evaluation of disease status there has come into existence an embarrassingly rich store of procedures from which the physician must make a choice. In a disease chronic in nature but subject to a multiplicity of complications, this choice may be not only difficult but of considerable importance to the future welfare of the patient. A few years ago treatment for a nephrotic patient was chiefly expectant together with some dietary supervision. Today this passive approach has frequently been superseded by repeated flurries of active therapy sometimes without any overall plan of attack. It is my belief that better results will be obtained if in each instance the physician will determine his immediate objective together with the criteria which will determine when and if that goal has been attained. This immediate objective should then be reviewed in light of the total treatment plan so that the physician will be prepared for any and all eventualities.

Since edema is usually the manifestation of the disease which drives the patient to seek medical assistance, we may begin our discussion with this topic. Time will not permit any review of the possible causative factors in nephrotic edema beyond the general statement that in these patients there is, among other factors present, a decreased plasma oncotic pressure by virtue of a severe hypoalbuminemia and there is an apparent loss of control limiting the reabsorption of sodium by the kidney tubule. Measures to reduce the edema are aimed usually at increasing the plasma oncotic pressure and increasing the renal excretion of sodium. Is the elimination of edema per se a necessary prelude to longevity or recovery in these patients? From extensive observation over a number of years it is my belief the answer to this question is no. Categorical proof cannot be adduced to support this statement but clinical observation accompanied by a battery of physiological and biochemical tests strongly suggests that edema per se has no influence on the course of the disease either malevolent or beneficent. This is not to say we should not strive for elimination of edema under certain circumstances but merely that under most conditions failure to remove edema or success in eliminating it is not necessarily a step toward absolute recovery.

When fluid gathers in the chest to an extent that it severely interferes with respiration or embarrasses the heart it must be reduced in this locale for preservation of life. Extensive peripheral edema and ascites on the other hand usually carries no significant threat to life and thus does not always require our first efforts. However, there may be compelling social reasons, nearly as valid, for elimination of edema in a patient. The problem of nursing care may bulk enormous because of massive edema; the patient may be the breadwinner of the family and the continued existence of the family group may be dependent upon his efforts; the preservation of the home may require the patient's active participation in family life, as for the mother; the costs of prolonged hospitalization may be threatening to demolish the economic foundations of the family. All of these reasons may be good and sufficient cause for efforts to eliminate the edema. Whatever the reason for specific therapy, the physician should be aware that thusfar the accepted methods of edema control in general leave the cause of the disease untouched, and although the physical appearance of the patient may have been altered in a most dramatic fashion the problem of recovery from the

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*Read before the Medical Society of Delaware, Wilmington, October 9, 1952.

disease process remains. This fact has become obscured because with recovery the patient does indeed lose his edema as he loses other evidences of the disease. But the diuresis, far from being the inciting event in starting recovery, is merely one apparent manifestation of recovery and can occur actually under conditions in which a more serious state of the disease may exist following it than before it. One must appreciate this fact or evaluation of his therapeutic efforts may well lead him into disappointments that are unnecessary.

A second area where a wealth of materials is available for therapy is in the control of infection. First we had the sulfa drugs, then penicillin and now a great variety of antibiotic agents stock the shelves of all our pharmacies. Infection to a nephrotic patient is always serious. It may result in death with bacteremia or the immediate complication may resolve only to be followed by a sharp reduction in renal function. Not all antibiotics have the same degree of usefulness in these patients. The dangers of the sulfa drugs, first toward the hemopoietic system and second, toward the kidney are known to all of you and I shall say little about them except that we must be circumspect in their use in these patients. Penicillin in its almost complete absence of toxic effects stands alone among the antibiotics. It can be used with safety at all times and for all dosages. Penicillin, however, has a restricted bacterial spectrum and today many of the organisms causing infection are of a species not susceptible to penicillin so other antibiotics must be used. Aureomycin affects a wide range of organisms but aureomycin frequently causes nausea, vomiting and diarrhea. These manifestations of toxicity of the drug for the gastro-intestinal tract may result in severe complications for a precariously balanced patient with the nephrotic syndrome. Vomiting and diarrhea are frequently dreaded visitors to the nephrotic individual and by themselves may cause such severe imbalance as to result in death. Streptomycin may cause a sharp reduction in renal function, a property I have not seen in the other antibiotics. Despite certain contra indications situations may arise when a calculated risk is necessary and advisable. When such is the case the physician must shoulder his responsibility and so direct the management of his patient that warnings of untoward effects will be immediately apparent to him. Fifteen years ago the more serious of these complicating infections were nearly always caused by the pneumococcus. During the past five years pneumococcal infections have become a rarity in my clinic while infections due to E. Coli, Proteus vulgaris and similar organisms have increased correspondingly. This means that a variety of antibiotic agents must be kept at hand ready for use at all times to secure the most effective result in the shortest possible time.

The spectre of starvation is a constant companion of the nephrotic patient. These individuals are depleted in body protein, capricious in appetite, afflicted with repeated nausea and in some instances vomiting. Efforts to restore plasma and body proteins to normal by feeding high protein or high carbohydrate diets have been consistently unsuccessful. Arbitrary changes in the diet designed to furnish a presumed better mixture to the patient are usually followed by loss of appetite and extensive food refusals. It is more important to maintain the caloric intake of the patient than to maintain any given distribution of foodstuffs between protein, carbohydrate and fat. When the psychological desire for food can be stimulated, the patient will as a rule take a satisfactorily distributed diet and the maintenance of caloric equilibrium is more easily attained. Force feeding of any kind will not force synthesis of cell protein and may by exacerbation of nausea lead to the reverse. Our dietary goal then should be to maintain caloric equilibrium by feeding natural foods with a rich and variegated vitamin supplement and to meet insofar as possible food whims, dislikes and cravings of the patient.

The psyche of the patient must not be overlooked. He must be given all possible help in adjusting his life to the limitations imposed by his disease and he must be assisted continually in developing a way of living which is compounded of a reasonable hope for the future with a recognition of the present limits of therapeutic effectiveness. This maintenance of a will to live must be encouraged individually and the successful approach will be as varied as the personalities of the patients involved and their families. Within this limited framework a great deal can be accomplished.

To me the most important and the one overriding requirement in the treatment of the disease is a maintenance of satisfactory kidney function at all times. Although there are many situations in which the capacity of the kidney to respond rapidly to the therapeutic assistance is markedly limited, this should not serve as an excuse for not carrying out supportive therapy, as in some instances evaluation of the situation may be faulty and intensive supportive therapy may permit a patient another opportunity for recovery or for satisfactory prolongation of life. Except in the most desperate of self limited complications, all therapy should be interdicted which may have a deleterious effect on the kidney. This does not mean that one cannot use a treatment such as a very low protein diet which may be accompanied by a lower level of kidney function because of decreased demands, yet it does mean that maintenance of kidney function at its maximum capacity is not always the best course to follow even when renal function is reduced. When severe acidosis develops it should be vigorously combatted and every effort should be made to prevent excessive reduction in blood carbon dioxide content. Some measure of renal function must be carried out at intervals to permit evaluation of the regimen on which the patient has been placed. I have found the urea clearance test the most useful procedure for this purpose. Any clearance test may, of course, be used but technically the inulin, para-amino hippurate and similar clearances are much more difficult and expensive than is the urea clearance test. Observations of the urinary sediment, urinary protein and urinary specific gravity corrected for proteinuria, are useful adjuncts but cannot serve the same purpose as clearance tests repeated over intervals of time.

Some of the more popular present treatments I have not yet discussed because they do not fall into a single category of disease control. The administration of concentrated plasma or salt poor albumin is such a treatment. When this therapy is carried out we are endeavoring at one time to increase the plasma oncotic pressure, relieve edema and provide a measure of protein nutrition. In an extensive series of cooperative observations with the American Red Cross at the end of the war it was our finding in common with all participants that administration of salt poor albumin in adequate amounts results in a significant diuresis in one out of two tries statistically. That is, in any series of patients so treated about one half of the patients will diurese after a single course of albumin, and following repeated administration of albumin to a single patient a diuresis will occur in about half the courses. There is no evidence that this procedure in any way provoked a recovery in patients so treated and it is my belief that in our patients so treated there may have occurred at least transitory setbacks toward ultimate recovery even though symptomatic relief was obtained. The excessive proteinuria resulting from this treatment is, I believe, potentially harmful, though in each patient certain, as yet unknown, conditions are necessary to permit this to become evident. The gradual abandonment of this treatment is further testimony to its effectiveness in establishing permanent improvement. When, however, one is confronted with a marked reduction in blood volume, administration of plasma or albumin may be an important first step in overcoming this deficiency until whole blood is available.

During the past three years there has accumulated a good deal of data on the effects of ACTH when given to nephrotic patients. The one effect which has been repeatedly emphasized has been the loss of edema. The incidence of diuresis following ACTH administration appears to be greater than that which followed salt poor albumin administration. Following one course of ACTH the incidence of diuresis has been placed as high as 82 percent of patients by Rapoport, Barnett and co-workers. Riley in an equally carefully studied group had just under 2/3 of his patients respond with a diuresis. The effects of ACTH on renal function have not been clearly established. Some studies suggest an increase in renal clearances following diuresis whereas others show no significant change. It is obvious that no single response in renal function follows ACTH administration. There is likewise a variety of data on the effects of ACTH on the level of the plasma proteins. In several series of patients apparent recovery has occurred in some few while others have continued downhill to death. Sufficient time has not elapsed since the work with ACTH began for a real evaluation of its place in the therapy of the nephrotic syndrome. Most reports have emphasized its diuretic effects but even in the more optimistic of these the incidence of edema free patients is not larger than we have obtained using the more classical dietary procedures but requiring somewhat greater time intervals to effect the therapeutic result. Again, recovery statistics from ACTH treated patients are not significantly greater at this time than has been our experience over the same time interval in patients not receiving ACTH. The drama of diuresis must not be permitted to obscure the statistics on final recovery which is always our ultimate goal. While it appears ACTH may be useful in treating the disease in some circumstances, we should endeavor, whenever it is used, to make such observations on its effects as will help to clarify the indications for its use.

In the treatment of the nephrotic syndrome our ultimate therapeutic goal should be complete recovery; it can and does occur. When a patient comes under therapy all efforts should be made to protect the kidney against further insult, to aid and abet its recovery in every way. We should strive to reach calorie equilibrium and to maintain it, that the patient's nutrition may be improved. We should protect the patient against the effects of infection to the best of our abilities. We should encourage the patient in his struggle to recover. When indicated for specific reasons we should remove edema or endeavor to cause a diuresis. The reason for each procedure in treatment should be clear, so that reaching a limited goal will not bemuse us to the extent of failing to achieve the ultimate goal of recovery.

Discussion

Dr. R. W. Frelick, Wilmington: I think that it is most appropriate for Dr. Farr to suggest a re-evaluation of our basic goals in treating nephrosis. However, some of his statements raise some interesting considerations. I wonder if there is not some of the same type of problem found in the approach to this disease as there is in diabetes, where some feel that blood sugar levels are of relatively little importance in treating the patients. Apparently the final answer is not available in either case, although it seems to me that the closer a patient can be kept to the normal state, the better off he is, whether it is in the treatment of diabetes or nephrosis.

I wonder, if as Dr. Farr infers in his statement, the edema per se has no influence on the course of the disease, whether this means that the well-being of the patient is not improved when he is edema-free—not only in terms of his subjective feeling, but in his nutritional status and blood chemistries? Isn't the edema associated with a disturbed metabolic state, impaired intestinal protein absorption, as well as to quality and volume of the extracellular fluid?

Metcalf, Kelsey and Janeway suggest that there is an improved glomerular filtration rate and increased effective tubular mass in patients made edema-free, either as a result of spontaneous diuresis, or the use of ACTH. Are these above factors not therapeutic goals?

Since Dr. Farr has raised the question of the underlying disease process in the nephrotic state, I wonder if he would be willing to elaborate further about his idea of its etiology. Is it of immunogenic origin? If so, may not ACTH serve some effect on the underlying process and therefore be worthwhile to use?

Is there any place for the use of HN^2 in the disease—probably based on interference with basic immunological reactions?

Finally, while Dr. Farr is apparently not particularly concerned with reducing the edema, per se, it would, nevertheless be interesting to hear him comment about the results Fox has obtained with the use of his sodium and potassium solutions in this disease.

Dr. E. F. Fantazier, Wilmington: I wish to thank Dr. Farr for a most interesting discussion of a perlexing problem.

Again I wish to emphasize the general care of these patients to maintain their general well being.

With the advent of ACTH, I think it brings up a number of interesting problems. I guess the answers to the use of ACTH are not known yet, but it is my understanding when children are treated with ACTH and ACTH is withdrawn after five or six days, there is quite a diuresis in the average patient treated, and also during this time that there is a hypoadrenal function. In other words, all aspects of the adrenal are suppressed, maybe likening this to what you find in the newborn, where there is diuresis and loss of weight in the first few days and again there is hypofunction of the adrenal.

I would like Dr. Farr to comment on the hormonal etiology of this disease, again as to the general edema loss on these patients, how the ACTH affects the hormones, and whether there is such great disturbance of the potassium and sodium balance.

Dr. L. B. Flinn, Wilmington: I am sure Dr. Farr is going to need a little extra time to answer all the questions already put to him.

We remember so well Dr. Farr's aid to us during the years he spent here in Wilmington at the duPont Institute, particularly with regard to his help and advice on this very subject and in caring for patients which were here during his sojourn at the Institute. He has always been helpful, he has always been stimulating, and he has talked to many, many groups here in Wilmington.

He has emphasized the necessity for individualizing all of these cases, which is true in so many diseases—so many metabolic diseases—and too frequently that fact is lost sight of.

The change in varying types of treatment over the years I will not recite, except to say that a lot has happened since cases were treated some years ago with the then orthodox methods to the ACTH technique during the recent times. Perhaps some of the recent cases now recover because the antibiotics of today allow such patients to live long enough to have a spontaneous remission. The certain trends in the present-day treatment and in the experimental field have interested us, particularly lately.

It has long been a question as to whether this disease is due to kidney trouble or due to some general metabolic condition. No one knows definitely, even now. Many individuals have given throid extract, which may or may not be of value.

Recently, as has been suggested here this afternoon, the electrolytic situation has attracted attention, particularly in regard to the sodium situation.

Dr. Fox, as you know, raised the question that maybe the sodium chloride space isn't where it was previously supposed to have been. Maybe there is chloride in the cell, in place of some of the sodium. Maybe these patients really need sodium, although most of them heretofore have been kept on a low sodium chloride diet and in therapy.

Dr. Farr has found from the radioactive sodium investigation that there is a reduction in the intracellular sodium. Giving such individuals sodium seems to be advantageous and, curiously enough, to produce diuresis. And, frequently, not always, when such a thorough diuresis is produced, something seems to happen—perhaps other than in the kidneys—but through the whole body mechanism whereby the individual may have a long remission or maybe a permanent one.

ACTH does apparently do something besides raising the level of the renal cortical action in these cases.

Dr. Farr has pointed out that certainly not all cases of nephrotics can be considered as being, or the trouble as being, due solely to a hypoactivity of the adrenal cortex. Nevertheless, there is a diuresis in many such cases and ACTH retains sodium. Maybe I will ask Dr. Farr, does the sodium which is retained from the ACTH go back to the cell, release chloride, perhaps, and thereby a diuresis of sodium chloride?

However, whatever the mechanism, it has been of great interest. The cases reported by Dr. Fox and more recently by Porter, Farr, Neubauer and others, of a number of patients treated by mouth with sodium and potassium acetate have diuresed, and along with it, clinically, have become markedly improved, not, as far as I can ascertain, in every case, but in a surprisingly large number of cases.

Dr. H. H. Stroud, Wilmington: Since observers for many years noticed remission frequently followed infection—measles, dengue, and so on and because measles has been induced in patients, with varying results—some good—I wonder if Dr. Farr feels that measles or dengue or some other short disease is ever worth while in the teatment of the disease?

Dr. Farr: I am afraid if I tried to answer all these questions in detail we would be here for a considerable length of time. However, I will do the best I can to give a brief comment on the interesting and complex problems which have been raised.

First, in regard to decreases in renal function following depletion of total body sodium, it was shown by McCance and his associates about 20 years ago that normal individuals severely depleted in body sodium stores exhibited a decrease in urea clearance. In nephrotic patients also depleted of sodium by vomiting, diarrhea and similar mechanisms, there appears to occur a reduction in extra-cellular fluid volume and a reduction in sodium concentration in this fluid. Under these conditions a reduction in urea clearance is found in association with the electrolyte disturbance. Therapy with sodium to restore the normal electrolyte relations finds the kidney responding with alacrity to resume that level of function noted prior to the disturbance. This is a general phenomenon in which nephrotic patients participate.

However, in the nephrotic patient there are special conditions which may make these relationships obscure. There is the presence of edema which may still be present despite exaggerated hypo-osmolarity of a degree similar to that which would be observed in more normal individuals if the salt loss were not usually accomplished acutely through the mechanism of water loss.

In the nephrotic patient it is frequently observed that the serum sodium may be reduced below the usual normal figure. Administration of sodium when this is the case and not acute sodium depletion, does not result in an increase in sodium concentration, but merely an increase in edema.

Recently, through the use of radioactive sodium, we have observed that in these patients it is possible to have a depletion of presumably intracellular sodium without reduction of sodium concentration in extracellular fluid and without reduction in extracellular fluid volume. When this presumed depletion of intracellular sodium progresses to a point where cell sodium is very, very low, there occur somatic changes in the patient. He complains of severe cramplike pains; localized tetany is frequent; convulsions may occur; acidosis becomes extensive and renal function falls precipitously to very low values of the urea clearance—3 to 4 percent normal. Administration of sodium in large amounts causes a reversal of these changes without increase in body weight. The urea clearance over a period of weeks returns to its previous value. This seems to be a different type of sodium depletion than the one described above and is still in the process of elucidation at Brookhaven by Dr. James L. Gamble, Jr.

Second, in regard to using high or low protein diets, I can give no definitive rules. Following experimental studies, we have thought from time to time that precise dietary parameters could be described but in each instance further experience has demonstrated that the description was inadequate.

In general, it is my belief that it is more important to keep the patient eating than to delimit what he may eat. That is, in the long run, caloric equilibrium is the most important dietary goal. It has been repeatedly demonstrated that a high protein intake alone will not force synthesis of tissue and plasma protein. During the past few years, haltingly, uncertainly, and with great caution we have also obtained surprising evidence that even under very low protein intakes with a constant number of calories, depletion of body protein does not continue to an unlimited degree, but that nitrogen equilibrium is attained. Patients on very low protein intakes—four to six grams a day for a four year old child—show apathy and listlessness to an extreme degree but plasma proteins remain constant and renal function may slow or stop in its relentless downhill course.

Again, the most important fact which seems to be emerging from these observations is that consistency and constancy of intake are the factors to watch most closely.

I have touched on the question of dietary protein and its influence on the damaged kidney. In some patients in whom there is a consistent downhill course in renal function over a period of months, we have changed their diet to a low protein intake in an effort to conserve the kidney. This procedure stems from experimental work which has demonstrated that in high protein intakes, animals with severely damaged kidneys will suffer progressive destruction of the remaining renal parenchyma and that similarly prepared animals placed on low protein intakes recover in a high percentage of instances. If kidney function can be preserved, it is easy later to restore the nutrition to a normal status.

On the other hand, maintenance of nutrition without preservation of renal function is valueless. Six months on a low protein intake will give an adequate rest to the kidney and if the procedure will be effective, results should be evident within this period.

I did not mention exposure of these patients to disseases such as measles and dengue partly because of time and partly because of inability at this moment to evaluate these procedures fully. Since in the general management of these patients, a great deal of effort is expended in attempts to protect them from infection it is only reasonable to demand clearcut indications as to the values and hazards of such procedures before willfully exposing these patients to an infectious disease.

Nitrogen mustard has been used by Corcoran and his associates at the Cleveland Clinic and by Chassis, Golding and their associates at Bellevue. Nitrogen mustard is a very toxic compound and must be used with great skill to avoid hazardous complications. Functional studies on patients so treated have revealed improvements in clearances and maximal tubular excretory capacity following nitrogen mustard therapy, but a great deal more information is necessary before it can be used as general therapy. The results to date have been suggestively encouraging and where means are at hand for careful observation and control of patients, nitrogen mustard should be one compound to consider for use.

Adrenocorticotropin (ACTH) may be a useful adjunct in the treatment of this disease. The elimination of edema at times is a necessity and at times is a desirability in the management of a patient. To achieve this specific goal ACTH may be of worth. I hold no brief for maintaining a patient in the edematous state; I do, however, emphasize the point that no clearcut relation has been demonstrated between persistent edema and increasing renal failure and, however gratifying elimination of swelling may be, it is not usually a step which is life-saving. Freeing of a patient from the burden of edema is no guarantee of recovery, nor is it a step which permits any relaxation in efforts to aid the patient to a spontaneous recovery.

Although sodium potassium and water may be distributed in unusual fashions in these patients and although we have been endeavoring to study the distribution of these substances in nephrotic patients, we have not yet obtained evidence for a disturbance in potassium distribution such as was suggested by our sodium data. The potassium disturbance may well exist for we know sodium cannot be removed from body fluid without a host of changes following in the electrolyte and water composition. Electrolytes must be considered as a whole, although we may study them separately because it is technically necessary so to do.

The administration oi alkalinizing salts as recently advocated by Fox stems largely from Osman's papers in 1927. It is my understanding of Fox's papers that a condition of acidosis is indication for such treatment. I have seldom observed acidosis in the absence of renal failure or other obvious cause for the imbalance and have not administered sodium and potassium salts to provoke diureses. This procedure is not without hazard as one serious complication may be cerebral edema with coma and ultimate loss of function of the higher centers as occurred in a patient recently brought to my attention. I believe there exist equally effective methods for routine delivery of edema with considerable loss hazard.

All discussors have brought up the question of hormone etiology in this disease. It is true that some manifestations of the illness suggest adrenal insufficiency which might be seized upon by some as the indication for corticotropin therapy. But there also have been described thyroid disturbances and some have advocated treatment with testosterone. The studies on anti-diuretic substance in the blood and urine suggests a pituitary disturbance which is likewise suggested to me by some of the disorders in nitrogen metabolism seen in this diesase. Onset of the illness may be sudden and recovery equally abrupt. Response to parathormone and pitressin in proper dosage is diuresis as with corticotropin. If a hormonal etiology be the correct one, it would appear reasonable to me that the primary disturbance might be considered to reside in the pituitary.

The fact that each of the above described hormonal disturbances may be absent in any one patient during vigorous phases of the disease when the total illness is slightly abated, if at all, compels me in part to this selection. The final answer will, I am sure, emerge eventually from the careful and extensive work which is being done now in various clinics, and until all the evidence is in, however attractive a hormonal or an antibody or a nutritional deficiency explanation may appear to a person, we must keep our minds open and alert and our procedures and approach flexible so that all measures of aid to the patient will be used and properly so.

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SURGICAL METHODS AND RESULTS IN THE MANAGEMENT OF INTRACTABLE ESOPHAGEAL ACHALASIA*

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Achalasia, megaesophagus, cardiospasm, and idiopathic dilatation of the esophagus are the more common terms applied to a condition in which the cardiac sphincter does not relax effectively during deglutition. This functional disturbance may remain subclinical in many instances. Patients learn to adjust their eating habits and get along surprisingly well; yet, most cases seek medical aid sooner or later because of difficulty in swallowing. The results of conservative therapy are usually gratifying. Surgical treatment is required in a small but significant percentage of patients when dilatations, psychotherapy, antispasmotics and special diets fail to bring relief. It is the purpose of this paper to discuss the surgical methods and their results with special reference to esophagogastrostomy and esophagocardiomyotomy in a personal, well-followed series.

Pathologic-Physiology

Unfortunately, too little is understood of the pathologic-physiology involved. The condition may be the result of incoordination between the nerve supply of the esophageal wall and the cardioesophageal junction. Hurst advanced the theory that relaxation did not occur when the peristaltic movement from above reached the lowermost end of the esophagus and therefore the obstruction to the passage of contents was not due to spasm. Puppel in a recent extensive study of esophageal motility concluded that a disturbed peristalsis or even total motor paralysis may be present and that the entire esophagus may be involved in the functional derangement rather than the lowermost end as suggested by many.

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Esophageal peristalsis is dependent upon the nerve plexus on the surface of the organ, and movements do not occur when the nerve supply is removed. Each primary peristaltic wave is preceded by a wave of inhibition (law of the intestine) so that the muscularis is relaxed just prior to the on-coming wave. The primary peristaltic wave begins with a contraction of the pharynx; similar secondary waves, stimulated by esophageal distention, arise at the level of the aortic arch in patients in whom the primary wave fails to carry the bolus of food. In achalasia the primary wave stops above the level of the aortic arch and thus the esophageal content may regurgitate to the cricopharyngeus muscle. No secondary waves are seen. Small purposeless, segmental contractions do occur, but they are ineffective in propulsion.

The cardiac sphincter is not a definite anatomical muscle but rather the continuity of esophageal and gastric muscularis. A pressure of 5-7 mm. of water from above will normally cause the sphincter to open, whereas 50 mm. of water pressure are required from the cardiac side. Considerably greater pressures fail to bring about relaxation in achalasia.

Stimulation of the normal pharynx results in relaxation of the cardia. Absence of the gag reflex or pharyngeal anesthesia, usually due to functional derangement of the medullary centers of the ninth and tenth cranial nerves, may be associated with spasm of the cardia. Vagotomy in animals causes increased tone of the cardiac sphincter and dilatation of the esophagus. In humans, stimulation of the vagus nerve causes cardiospasm in some persons and relaxation in others which suggests that the nerve carries both motor and inhibitory fibers to the cardia. Knight has demonstrated that the cardiospasm picture in the vagotomized animal can be prevented by a sympathectomy; however, Mitchell, after a careful anatomical study, concluded that complete sympathetic denervation of the cardia requires a much more extensive operation than is practical in the human patient. Following the operation for hypertension with complete sympathetic denervation, no definite evidence of change in esophageal function was noted by Grimson. Ochsner and DeBakey concluded that their experience with sympathectomy for achalasia was unsatisfactory. No case of achalasia has resulted from vagotomy as practiced by some surgeons for duodenal ulcer, yet recent studies suggest increased sphincter tone in some cases.

Whether the usual mechanism of closure of the sphincter is related to gastric acidity, to intragastric pressure or filling, or to some other factor is unknown. A strong stimulation of the abdominal viscera experimentally induces reflex cardiospasm through sympathetic afferent pathways. Similar spasm may be invoked by intrinsic pathology such as esophagitis, foreign body, diverticula, carcinoma, peptic ulcer and trauma. Possible extrinsic stimuli, caused by disease elsewhere in the gastrointestinal tract, are most notably, peptic ulcer in the stomach, or duodenum, and disease in the biliary tree.

The functional narrowing of the cardioesophageal junction is the usual anatomic change, followed by gradual lengthening and dilatation of the proximal esophagus, especially to the right side, for there the expanding organ meets the least resistance in the posterior mediastinum. Various gross appearances probably represent different degrees in the course of the disease. The fusiform type may progress to the widened flask shape. A sigmoidal configuration with lengthening and redundancy is indicative of long standing achalasia.

The esophageal muscularis is often thickened above the narrowed segment, possibly on a work hypertrophy or inflammatory basis. At operation no sign of adhesions is seen and gross evidence of inflammation or constricting agents in the hiatal area are absent. Extrinsic pressure by the diaphragm, by adjacent organs or by a vascular ring does not occur.

Stagnation of food and occasionally repeated dilatations may lead to varying degrees of inflammatory change with superficial or deep ulceration, even perforation. The resulting granulation tissue may bleed profusely. Because of the increased intraesophageal pressure due to the ever present liquid food column and in part to straining efforts, it is not rare to see a pulsion-type diverticulum develop. Achalasia patients, when in the recumbant position, and especially when asleep, are in constant danger of regurgitation and aspiration pneumonia. Pleural effusion, lung abscess and bronchiectasis may result. In the intractable patient chronic semi-starvation soon produces severe nutritional deficiencies, including avitaminosis, particularly of the water soluble group.

Pathologic changes in or an absence of the myenteric plexus of Auerbach have been reported in a number of cases, but whether or not these changes are primary or secondary remains a question. Similar myenteric nervous changes are noted in Hirschprung's disease or megacolon, and indeed, both concommitant megacolon and esophageal achalasia have been recorded, suggesting a common, possibly congenital, origin. Plummer-Vincent syndrome is another example of achalasia where the inferior constrictor of the pharynx is involved in anemic, middle aged women.

Signs And Symptoms

The signs and symptoms of achalasia of the esophagus are chiefly dysphagia, regurgitation and substernal discomfort after meals. Warm and liquid foods are better tolerated than cold and solid ones. Excessive amounts of water are usually consumed in an attempt to literally wash the food down. Many patients develop an almost voluntary control of the esophagus in that they learn to regurgitate the gullet content at will to obtain relief from postprandial discomfort. With the intractable group of patients weight loss and anemia are almost universal.

Among the exciting factors already mentioned, psychic trauma cholelithiasis, peptic ulcer, and pregnancy existed in four instances in our series. Males outnumbered the females, yet others have shown a preponderance of females. Three patients were negroes. In this series the onset of symptoms began in the third or fourth decade of life with the exception of one case whose symptoms dated back to early childhood.

Treatment

The majority of patients with achalasia, unaccompanied by extreme dilatation and stasis, respond satisfactorily to conservative therapy which consists of a bland diet, skillful advice and suggestion on the part of the physician, amyl nitrite, and bougie dilatations. Because of intractability to medical therapy and instrumentation, ten to fifteen percent of these patients seek surgical relief. According to Maingot, surgery is indicated as follows: 1) When owing to the great size and sagging of the flask-shaped esophagus, dilatation under direct vision is a hazardous undertaking or is not feasible; 2) When the patient has failed to respond to one or more courses of treatment with a hydrostatic bougie; 3) In infancy and childhood as young patients cooperate poorly and frequently do not respond to instrumentation, whereas operative treatment is strikingly successful; 4) In all those cases where the diagnosis is in doubt because of the possibility of tumor in the cardia or lower end of the esophagus.

Surgical procedures designed to enlarge the cardio-esophageal junction are not new. Using the transabdominal approach, Mikulicz performed dilatations as early as 1900 through a gastrotomy at first, and later by invaginating the anterior gastric wall through the esophageal orifice. Wendel in 1910 incised the narrowed segment, the adjacent cardia and closed the opening transversely. This method is recommended by Sweet, and is referred to as cardioplasty. Girard in 1915 modified the procedure by leaving the mucosa intact. Heller proposed esophagocardiomyotomy in 1913, advocating both an anterior and a posterior myotomy incision. The use of the single anterior incision only, has been popularized by Maingot and Garin.

The original Heyrovsky esophagogastrostomy, a side to side anastromosis between the cardia and the esophagus, was soon modified by Grondahl after the method of the Finney pyloroplasty because of the awkward spur at the gastroesophageal orifice. Complete resection of the lower esophagus and cardia was advocated by Rumpel and Pribram. With the acidity factor in mind Wangensteen has suggested wider resection of the gastric segment. The surgical procedure most widely used in this country during the past decade has been the Grondahl esophagogastrostomy, while the modified Heller operation or esophagocardiomyotomy has been the choice in Britain.

Results

In reviewing the literature to assess the results of these methods of surgical treatment a great deal of confusion has arisen. Many of the patients were inadequately followed. Early attempts at esophageal surgery were accompanied by a high mortality, while at the present time these procedures are rarely followed by death. Recent advances in preoperative preparation, chemotherapy, antibiotics, anesthesia, and blood replacement have changed the overall picture and they make for an unfair comparison.

There are too few series in the literature where the same group has tried and followed two or more different techniques, to allow an unbiased opinion. Asymptomatic post-operative patients are important in evaluating results, but this is subjective evidence. Cases should be followed for at least six months, preferably two years or more. Follow-up studies should ideally include periodic barium X-ray studies and where possible, esophagoscopy. If a patient has a return of symptoms or if he requires further dilatations after surgery, he should be classified with the unsatisfactory group, even though he is improved by the added instrumentation. Similarly, if a patient requires further related surgery he should also be listed as unsatisfactory. With these thoughts in mind several of the more recent series showing experience with one or more of the techniques are tabulated in Table 2.

Both Womack and Wangensteen have had considerable experience with the resection technique in achalasia. Although we have not employed this procedure, we wish in retrospect that it had been used in one case of the sigmoidal configuration, associated with a high gastric acidity and a duodenal ulcer. This patient and two others, who were operated upon by the Grondahl esophagogastrostomy method, have returned with recurrent symptoms and have in subsequent years required further dilatations. One case required further extensive surgery which was performed elsewhere. All of the nine cases with the Heller operation have remained free of symptoms to date, although one was readmitted because of hematemasis, a continuous complaint for more than 20 years. This 58 year old colored male had been admitted two years before with complaints of difficulty with swallowing, shortness of breath, a twelve pound weight loss, bloody vomiting and pain after meals. Twenty-five years before this admission he had been treated medically for a peptic ulcer. Eight years previously he had been X-rayed for the cause of hematemesis and the severe degree of achalasia was discovered. Conservative therapy, including dilatations, had failed to bring relief. Esophagoscopy revealed severe inflammation with the presence of bleeding granulation tissue. It would appear from this case that the Heller operation was successful in ameliorating the symptoms but it failed to improve the long standing esophagitis. Further surgery directed at lowering the gastric acidity is not being considered at the present time, because the patient responded so well to an ulcer program and because his total gastric acidity is less than 20 clinical units.

Discussion

An evaluation of two or more related surgical procedures with follow-up studies by the same surgeon, esophagologist, radiologist and internist would appear valuable. A sincere interest in this problem has been rewarded by the fourteen patients with intractable achalasia referred to us during the past seven years and it has afforded the unusual opportunity of comparing the Grondahl and Heller operations first hand in a significant number of cases. That these two groups are reasonably comparable as to age and duration of disease is shown in Table 3. All patients in this series were studied before surgery by the esophagoscopist, both before and after surgery by the radiologist. Whenever possible a close contact has been kept between the surgeon, the psysician and the patient. Although on occasion this has been difficult as in a case from the Dominican Republic, yet we hear from him twice a year and recently have received X-ray films representing a two year follow-up.

Like Maingot, we prefer the transabdominal approach, usually through a high midline incision; however, on several occasions the thoracic or combined route has been employed in our series. Even though the transthoracic exposure has many desirable features, it is unnecessary in most instances.

The immediate results of esophagogastrostomy are gratifying, but unfortunately the late results are occasionally disappointing. A new type of dysphagia develops due to kinking at the cardioesophageal junction or contraction at the stoma (Barrett & Franklin). It was interesting to observe that in the three cases with poor results in our series tested by esophagogastrostomy the largest bougie or dilator would easily pass into the stomach. This suggests a functional basis rather than an organic stricture as the cause of failure. Complete interruption of the smooth muscle as practiced in the Heller operation should, therefore, be followed by a lower incidence of functional contraction than those procedures which restore complete encirclement by the mascularis layers.

The most serious cause of trouble, according to Barrett and Franklin, is the postoperative occurrence of peptic esophagitis which may follow any procedure that destroys the normal achitecture in the region of the sphincter. The acute angle at which the esophagus joins the stomach has been pointed out as an important factor in preventing regurgitation into the esophagus. This relationship is least disturbed by the Heller operation. Our postoperative X-ray studies in the recumbent position have shown that reflux barium passes upward into the esophagus with the esophagogastrostomy technic, whereas little if any is found to regurgitate with the esophagocardiomyotomy operation.

In summary then, a trial of dilatations and medical therapy is indicated in view of the good results obtained in the majority of cases. Associated visceral pathology may be found to be an aggravating influence in a surprising number of cases. Surgery should be reserved for those patients who do not respond to conservative treatment and the small group in whom malignancy cannot be ruled out. Our experience with fourteen patients with intractable achalasia, treated either by esophagogastrostomy or by esophagocardiomyotomy, has clearly demonstrated to us that the late results with the latter technic are superior.

Discussion

Dr. Harold S. Rafal, (Wilmington):

We are indebted to the speaker for his excellent presentation. Especially valuable is the careful analysis and comparison of results of the two most popular surgical technics applied to the treatment of advanced achalasia. As he pointed out the data here presented has been accumulated by one team and as such is especially valuable.

In order to discuss this paper in the light of local experience I have been privileged to draw on the experience of other surgeons other than myself. I am indebted for their gracious permission to consult the records of their cases. Though I have heard of at least six cases I have had written evidence of the distant post-operative course in only three. However, the verbal and somewhat vague reports of the remaining three are very similar to the others.

All patients subjected to definitive surgery had esophago-gastrostomy. There were no hospital deaths. All were relieved of dysphagia and vomiting. There were no significant post-operative complications. All but one were done through the trans-thoracic route. None required further surgery for alchalasia. All these patients were satisfied with the results of surgery. Of the three patients for whom there were written records two lost weight. These, however, were obese to begin with and the main indication for surgery in one was the necessity for dilatations about once weekly and in the other for severe pain with a greatly dilated esophagus. The other patient had a dramatic weight gain of about thirty pounds.

It requires more than the casual question "How do you feel" to elicit the true picture in some of these cases. Relief of dysphagia makes them so grateful that they do not realize that they are not as well as they think.

All three carefully followed patients have developed ulcer syndromes since operation, relieved by alkalis, diet, and in one Banthine. All three have had demonstrable anastamotic ulcers. All three suffer from acid regurgitation on bending over. One has mild heartburn relieved by simple measures. One, two years after surgery, required a formal ulcer regime for relief of epigastric discomfort and heartburn. One had rather severe melena from slow bleeding from his anastamotic ulcer.

All in all, we may summarize by saying that the patients were much more satisfied with the results of their operation than were their surgeons.

The evidence presented by the speaker strongly suggests that esophago-cardiomyotomy has definite advantages over esophago-gastrostomy. Since local experience with esophago-gastrostomy has been unsatisfactory I have decided to try esophago-cardiomyotomy on the next case. It appears that the latter has the additional advantage of being technically simpler although great care must be taken not to pierce the mucosa. Also the mediastinum, upper abdomen, and pleura are not exposed to contamination.

A colleague has suggested a maneuver which, theoretically at least, should be helpful in esophago-cardiomyotomy. If a tube of Miller-Abbott type were passed to the cardiac and inflated, it would serve as a darning egg against which to incise the muscularis. After incision of the muscularis, injection of dye through the open lumen of the tube would reveal even minute perforations.

Before closing, I would like to mention two other cases. A 77 year old woman, weighing 73 pounds, was admitted with marked fibrosis already present. A preliminary Janeway gastrostomy was performed and the esophago-gastrostomy four months later after her state of nutrition had been restored to normal. I have no written detailed record of her subsequent course but I have been told that she did "alright" (quite). Patients should be persuaded, if possible, to accept surgery before reaching such a precarious state.

One other case had emergency jejunostomy, under local anesthesia, for feeding purposes. This proved of no avail and he died several days later. This case is a grim reminder of our obligation to treat patients before they are moribund.

In conclusion, I want to thank the speaker for his most helpful and enlightening presentation.

Dr. W. M. Pierson, (Wilmington): The treatment of achalasia has become revolutionized in the past two years. Not too long ago it was looked upon as a sort of "No-man's Land."

As pointed out by the speakers, there are various reasons for that, including anasthesia, preoperative preparation, chemotherapy, antibiotics, and so forth, in addition to general improvement in technique. The role of incision versus anastomosis has also reversed itself, in that where a very few years ago anastomosis might have taken a leading role, it now has a minor one. Despite the enthusiastic reports of anastomosis of pediatricians in treating achalasia, the fact remained that the intractable cases treated by dilatation was a failure and so recognized—and it has always been the hope that surgery would be developed to take care of these cases. Esophagogastrostomy is, however, indicated in all cases of obstruction of the esophagus and in these cases even of intractable achalasia, many are determined by X-ray. It is necessary to rule out the presence of organic disease, such as carcinoma or ulcer.

I would like to add one more thing. I like the new term that Dr. Davis gave you on achalasia, in coining the terminal segment of the word "esophagus" *phagosus*: that seems to fit the picture pretty well.

There is still considerable confusion as to the pathology that is found at operation, and I was very much amazed to hear that Wagenstein and Pilsner and several others had divergent opinion on that score. There is actually no pathology found other than narrowing of the lower end of the esophagus. The tissue has the same structure, cardioesophageal orifice, unless there is a peptic esophagitis present. Then a fibrosis occurs. In the true cardiospasm as I have seen it there is no change, other than the change in the circular muscles at the esophageal junction. The wall is greatly thickened, of course.

Of course, there is at present a considerable divergence of opinion as to cause and treatment. The cause may very well be a paralysis of the entire esophageal wall.

A great deal has been said and written in the past about some physiological disturbances at the cardio-esophageal junction.

Now, as to treatment, there have been many different procedures employed. We, as Dr. Davis showed, were at first enthusiastic about esophagogastrostomy; as we followed the cases through, however, there were recurrences of symptoms, bleeding and pain and, much to our surprise in several instances it appeared as though obstruction had recurred, that is, mechanical obstruction had recurred. It was a matter of the size. We therefore were anxious to try another procedure. Esophagocardiomyotomy is an easy procedure. It is being done transabdominally. It is a procedure that is very similar to the Ramstedt operation for byloric stenosis, and one must be careful not to puncture the mucosa. Yet, if that does occur, a small, fine stitch may be employed for closure without danger. Now there are more and more clinics reporting favorably on this Heller procedure, or the "modified Heller procedure" as we call it. Now I believe it is probably the operation of choice.

There are an awful lot of these patients that do not require surgery, and Dr. Pierson would be able to care for probably 90 per cent of them with dilatation and continued obsevation. So that we do not recommend, of course, operation in all cases; only the group of patients that don't respond to the dilatation over a period of time and who don't maintain good health.

Dr. Davis: I would just like to point out again that the mortality in this group shown on the slide, of 114 cases, was less than 1%. But in the group that we handled, those with intractable achalasia, two of the cases had had a history of perforation from bougie dilatation. I think in South America there was a report recently—and, incidentally, achalasia of the esophagus is extremely common down there—they are now doing surgery, or advocating surgery, in San Palos, in all cases because of the number of cases that have had complications from endoscopy even in the most expert hands. The two patients in our experience had the same results from endoscopy. I think the endoscopists would admit that this must always be done by someone extremely experienced, and even so, there is a certain inherent danger.

Dr. Wangensteen has recently reported in *Annals Of Surgery*, the last issue, his experience, and has come out for his operation of resection of the lower esophagus and most of the stomach, and for the Heller operation.

On the question of fibrosis that I think was brought up, that can be confirmed by compressing the stomach after the operation, in which case it will balloon out if it has not been perforated. If there is a perforation and it is repaired by a silk suture, the area should be drained. We have not seen too much of that, but I think possibly one of the causes of that could be that many of these patients have undergone a course of dilatation with stretching, and perhaps there was a little tearing of the musculature, and that fibrosis probably could be secondary to the instrumentation, and, after all, successful instrumentation depends on stretching those muscles down there, so I think the fibrosis mentioned could be as a result of dilatations.

I want to thank all the discussers for their discussion and the opportunity of coming down here.

THE ROLE OF THE GENERAL PRACTITIONER IN COUNSELLING BEFORE AND AFTER MARRIAGE*

O. Spurgeon English, M. D.,**
Philadelphia, Pa.

I was pleased that your society has seen fit to have some discussion of counselling before marriage; that is, presumably, counselling for the "happy" marriage.

A happy marriage is a very definite therapeutic measure. Perhaps, better stated, it is a very important phase of preventive medicine. Why? Because, the individual draws his first strength from his own immediate family. The more wisely a child is fed, is trained and guided and taught, the more likely he is to grow into a happy creative person. And it is the serene and happy mother and the strong and wise father who together can best accomplish these things.

The child learns a great deal about harmony and cooperation from his family, and as he learns he gains a certain strength to go out into life. In the late teens, when he must leave home, he continues to need strength and help; not only to keep up his sense of well-being, get his work done, be a good citizen, but to keep his body physiologically in order.

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*Read before the Medical Society of Delaware, Wilmington, October 10, 1951.

**Professor of Psychiatry, Temple University Medical School.

If it is true that nearly one-third to one-half of the problems that come to the physician these days are of emotional origin, or there is an emotional factor in them, then marriage counselling, to maintain a happy marriage, is a continuation of the strengthening effects of the home.

For marriage constitutes the second home. It is supposed to bring security and happiness to both man and woman, and help to keep them healthy. Therefore, if marriages are not successful, we cannot have happy and healthy people.

Can an unhappy marriage make people sick? Yes, I think it can. I think it definitely makes people emotionally ill, and secondarily, physically sick, with those kinds of illnesses that we call psychosomatic.

Someone has asked if an individual could go "crazy" living ten years with the wrong woman or wrong man. I think, as I look back over my practice, the answer would be "Yes; occasionally." Ten years of very unhappy living with a wrong person, in a vulnerable individual, could actually cause sickness, and does produce a great many psychosomatic disorders. So, it seems important that the general practitioner does his share in counselling people and practice this kind of preventive medicine.

Now, the place for counselling for the general practitioner generally, is before marriage, when people come for blood tests or physical checkups. These people constitute a fairly large number—a much larger number than those who come primarily to say, "I am going to be married and I wish you would talk to me about how I can make a good and harmonious marriage." I believe that many of these patients who come for blood tests or for physical examinations, are hoping, or looking for, the doctor to say something wise and helpful about making a good marriage. And there is much for the physician to say!

I am not contending that people are not coming in increasing numbers to the doctor for pre-marital counselling. They are. But I think if we only teach those who ask for pre-marital counselling, we are missing a great opportunity. However, unless the general practitioner is aware of a certain amount of constraint in his patient and is alert to this particular phase of medical practice, his patient will not ask the questions he thought of asking, or he wants to ask, but will take his blood test and physical examination and be on his way, his questions and desire for information unanswered.

Of course, there comes the matter of "time." One of the requisites for being a good marriage counsellor is to have enough time. And, I suppose nobody does. But, one just has to find time, these days, for the things he is interested in. Therefore, I feel that the physician who wants to be a good marriage counsellor must find the time to talk to the patient who comes for a blood test or physical examination. And, furthermore he should have a prepared "approach" to it.

There are several ways in which this can be done. For instance, if a patient is in your office for a physical examination, you might ask him some questions about himself. A question about how long he has been engaged, pretty quickly leads to questions like this: "Do you have any misgivings as to whether your marriage is going to be a happy one?" "Have you ever thought about the figures of divorce and separation, and wondered whether you will have any difficulty in making your marriage a happy one?" Or, "Do you feel sure you know what goes into a happy marriage?"

This often provides an opening for the individual who has questions or misgivings — and, if he has not already given it thought, he may immediately ask, "I don't know, Doctor; what do you have in mind?"

That, of course, brings up the question of what are the "norms" in marriage counselling? I believe there are a few precepts that make up a happy marriage that the general practitioner should have in mind when counselling. They might be as follows:

(1) Every individual should realize both before his marriage, and during it, that he must give more than fifty per cent of the good will, love, understanding and appreciation that goes into a happy marriage. If he does not; if he is not prepared to give more than fifty per cent, there will be no reservoir

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of good will, of good memories or of good thinking about his partner. Therefore, the dictum "Marriage is a fifty-fifty business," is a good one. If everyone abided by it there would be many more happy marriages. But remember, I said, that each person must do more than fifty per cent, in order for there to be a "reservoir" — because a reserve is very important. For instance, suppose a wife or husband has a bad day. Then, one of them has to come forth and give more than fifty per cent of the tolerance, understanding, love and appreciation. Now, feeling bad can last for more than a day. People often have low periods of a week, two weeks or even a month. One of the partners must be willing to give even eighty per cent or ninety per cent, and be extraordinarily understanding rather than complaining and responding by being disagreeable and unhappy.

(2) Parenthood, which is usually an eventuality, should be at least a fifty-fifty proposition too. Children do come along, and young people preparing for marriage, should be taught that parenthood is a difficult job made eaiser if both are willing to share responsibility in raising their children.

In unhappy marriages it is usually found that the wife does everything for the children while the husband feels there is no responsibility on his part, except to provide money. He says, "I make the money; you take care of the kids. I work hard—I don't want to be bothered—I want to have the children quiet and out of sight, and out of mind." He leaves all the decisions to his wife. When she asks, what to do about school, or clothes he says, "Do what you like; I wish you wouldn't bother me about those things." His wife becomes overburdened and unhappy and the marriage comes under a strain. She is annoyed with her husband and becomes complaining about it and they just don't get together. Sharing the burden would make it easier, and if life isn't too hard it is apt to be happier.

(3) Sexual adjustment should be thought about and talked about before going into marriage. And a physician can do a great deal about helping a couple through this difficult phase.

I was standing one time before a co-ed group of college students in a large auditorium. We were talking about happy marriages and I said, "You know, only a few of you in this room will have an excellent sexual adjustment. You should be happy if you have a good sexual adjustment. And, if you are going to have it, it will come about this way — you, as the husband, will be patient and understanding and restrain yourself in your sexual desires; and you, as the wife, will try to be understanding of your husband and step up your sexual activity. Then you may approach a good sexual relationship, with each trying to do something constructive to meet the make-up of the other. But any young couple who enters into marriage not knowing a great many things about the opposite sex is going to have a great strain put upon their sexual adjustment. It is going to be bad. Both parties are going to be disappointed in it."

So, a couple facing marriage need to be helped with some discussion of sexual matters, and to have some of these things pointed out to them in an authoritative manner by a physician. It prevents disillusion and it helps them to be patient and work at getting a healthful adjustment.

(4) Another important point to make in pre-marital counselling is that a happy marriage does not take place spontaneously. All happy marriages have to be worked out. The man thinks, "Gee, I am marrying a lovely girl; she is going to make me happy from now till doomsday." The girl thinks, "I am marrying a wonderful fellow; I am going to be the happiest girl in the whole world." A week or two passes and already there is disillusionment. Why?

Because people must be willing to adjust as they go along and not attempt, every day, to draw complete happiness from the marriage. After all, a marriage is no better than the two people who are going into it, and no one is perfect.

These then are a few of the concepts that are important to bring up and discuss—to make sure that those going into marriage understand them and think about them.

It is very important for the general practitioner to understand and think about marriage counselling, because a great many people would rather be counselled by their own doctor than go to a psychiatrist. Every psychiatrist does counselling but it might well be done by the general practitioner, if he takes interest and time to equip himself. Here is the opportunity to give your patients the advice that they want. And they would far rather have it come from you. They know you, and respect you. In some ways you have a better reputation than the psychiatrists have. You are "good and wholesome,"—you are "the family doctor." You are not "one of those phychiatrists that go around looking for complexes and accusing people of various and sundry things,"—as so often phychiatrists are accused of doing.

Perhaps many of you have not, up to this moment, taken too much interest in marriage counselling and would like some suggestions as to how to become prepared. There are a few books that serve well as an introduction. A physician doing marriage counselling should have read Dr. Kinsey's book "Sexual Behavior in the Human Male." W. B. Saunders Co., publishers. A condensation called "About the Kinsey Report" published as a Signet Special is available wherever books are sold or on the newstand. The first chapter of that book has the best summary I know of some of the important factors that Kinsey discovered. It is a sort of "short course" on Kinsey's findings.

Another book to read and which you will recommend frequently, is, "the Happy Family," by John Levy and Ruth Monroe, published by Knopf. It offers constructive ideas to anyone looking for solutions or answers to what a happy marriage might be. "The Successful Marriage," edited by Fishbein and Burgess and published by Doubleday, is another helpful book. Clifford Adams' "How to Pick a Mate"—published by Dutton, is also very good.

A book for older married couples that I think makes very good reading is called "Aging Successfully," by George Lawton, published by Columbia University Press. It is effective for those whose viewpoint needs broadening. For unhappy marriages often come from a narrow viewpoint. A limited mental horizon and too much self-centeredness often adds to marital unhappiness, particularly in middle age. The book "Aging Successfully" might be good for those reaching middle life.

In marriage counselling a physician must have the ability to talk to people about love —because, of course, one of the basic reasons for marriage failure is that the people concerned have ceased to love each other. For instance, a woman now about forty-two, had married a man she said was a fine man, but the marriage had come to such a point that she was very unhappy, did not sleep well, was tense and depressed. She was not thinking of divorce at all, but was defeated and unhappy about the way the marriage was going. She had come to see a lot of things about her husband, she said, that were wrong. For instance, she wanted to go to one of the evening courses in one of the local high schools, to broaden her outlook and she wanted her husband to go with her. He refused. Now, he may have been a foolish man, because, not only should he have done it for his own edification, but, he should have realized that if he did not meet his wife half-way in some of the things she wanted he would have an unhappy wife and an unhappy marriage. If he had put even one-fourth of his time into making his wife happy that he put into making his business successful, he might have had a happy home and his wife would not have had to seek her doctor's counsel.

However, we found this to be true about the woman. She had come to the point where her mind was almost completely involved with the things her husband was *not* doing for her, and she had lost sight completely of the things he *was* doing for her. She could no longer be positive, and said she was "out of love." The truth was she no longer loved her husband and her love had turned to hate through frustration and disappointment. While she kept insisting they still were in love with each other, in reality they were not. She was very much dissatisfied with him. The situation needed a great deal of understanding about love to correct it. The patient had to be able to become more positive and see the good things about her husband. She needed to reach down within herself and bring out more of love and reject her hate and dissatisfaction. Further, she had to learn to help her husband share his life with her and do some things they both would enjoy. For when a husband and wife become dissatisfied, they can no longer talk to each other.

Marriage counselling is always much easier if you can get the parties together and solicit cooperation between them. Unhappy marriages will rarely correct themselves. They need an umpire, a referee, someone to constructively enter into the picture and see what good is left of the marriage and help put it back together. This is an important fuction for the marriage counsellor and is one of the reasons why he must have a liking for people, an ability to see their better sides, and be able to urge them to work together to try to reconstruct some of the love they presumably had when they started.

It is, in reality, an educational process and a great many general practitioners fail to recognize this. Education plays a relatively small part in their active practice. If the general practitioner is to do more marriage counselling and help people in this way, he will have to take on an "educational" role. He must orientate himself in the knowledge of what makes a happy marriage. He must know how to discuss sexual adjustment, how to deal with ideas that can help these limited people to widen their horizon. And above all, he should cultivate within himself a kind of an "approach" — a fund of information, with which to stimulate those seeking help to see new possibilities in a marriage that has turned from love to hate.

Marriage is an institution created to foster love. And how often love goes out of marriage because of unnecessary frustration and disappointment! The wise counsellor knows this and helps his patients to see the reality of what marriage is going to be, and to avoid those disillusionments. After marriage, when disillusionment and anger have caused hurt then the marriage counsellor must step in as the arbitrator and peacemaker. He can revive patience, tolerance, love and understanding and teach the importance of mutual approval.

One more point needs emphasis. There is no use in a husband or wife disapproving, or trying to change his partner by disapproval. This constant saying, "I don't like what you do. You are a terrible person. Why don't you be better," is poor technique. Constant complaint rarely if ever changes a child or a husband, or a wife. It is a bad approach that accomplishes nothing. A husband or wife can be shown how to see the better side of his spouse, become positive in his approach and work toward putting himself in a position where he can appeal to, or request his partner, to change his or her ways. For instance, take the case of the 42-year-old woman who was rather an unhappy person. The marriage counsellor had to help her become, in her husband's eye, a better and a more lovable person to live with. After she had created that impression, she could then say to him, "I'm sure now that you love me. Will you do something to make me happy? So that we can share something together, will you go with me to the evening classes? It will make me happier to do this with you." I venture to say the man was happy to do it.

Discussion

Dr. Verna Stevens-Young: (Wilmington): Dr. English is to be congratulated on his excellent presentation of a very timely subject. I feel sure the psychiatric physician must be deeply impressed with the importance of a satisfactory marital adjustment. In the home that is well adjusted, in so far as a satisfactory marital relationship is concerned, your children are being nurtured in character, in unselfishness and in a sense of responsibility, from infancy. On this broad base of character is built satisfactory marriage.

The responsibility of a trusted physician is of the greatest importance in making himself easily available for questioning by persons, either premaritally or postmaritally.

There is much sexual maladjustment in women, based on many factors. An analysis of these factors may well come within the role of a physician. The time is ripe for the physician to brush off restraint and realize that he must make himself available to persons who need this help.

We are very grateful to you, Dr. English, for having called our attention to this very important subject.

Dr. H. T. McGuire (New Castle): I think that it is a tribute to the changing attitude of our thinking, following the very erudite address of our retiring President this morning, to have philosophic subjects. And if I might borrow a sentence from your address this morning—that the family unit is the keystone of the arch of our democracy, since a family is in essence the unit around which our communities are built—it follows necessarily that a happy marriage in a well-constructed and integrated relationship is of inestimable value.

The physician and particularly the general practitioner has a very severe responsibility in this problem. Both pre-marital and post-marital counselling is inherent in his practice. There is an appeal for it and a need for it, and in my opinion we have not met the problem with the force and the strength and the attitude that we should, because, as Dr. English has very aptly pointed out, the psychiatrists are often shunned and for reasons of which the psychiatrist is aware, and so are we.

I heard a fellow facetiously remark one time that everybody who is married has a problem. But no problem is going to be solved by not facing it. Persons look at their marriage and what they see they don't like and it nauseates them—they get sick inside and out. Here it is that I think sometimes the physician misses the boat. He has the responsibility of recognizing the religious, the moral and the ethical attitudes of the individual he is counselling.

There is frequently a tendency on the part of the counsellor to project his ideas in conflict with the ideas of the individual who has certain moral, ethical and spiritual values that he cherishes. These should never be in conflict. That is an absolute essential.

With respect to the sexual phases, I think Dr. English will agree that when there is good moral, spiritual and emotional adaptation and integration, that the sexual phase of marriage will eventually integrate itself properly.

And that of course emphasizes another important feature of marriage in that it is not mainly a physical union because of the great percentage of personal relationships in which sexual manifestation and relations are purely coincidental—although morally and ethically and spiritually marriage was intended and is intended and does provide the means of procreation. One can not decry the importance and necessity of proper intersexual relationship, but it can't begin there: it has to start with the proper emotional, spiritual and moral attitude. Then, with that being true, the sexual phases and understandings will follow. Of course, there again, physical abnormalities and things of that sort should be corrected.

I, as a general practitioner, see the results many times, and I am sure you all do, too, of poorly integrated marriages, poor preparation for marriage, and marriages as an escape from unhappy homes, or marriages as a solution to other problems, and those all to hasty marriages — emotional upheavals that result from such marriages—all these things result in unhappy marriage.

It is indeed timely that a subject of this character should be incorporated in our program, because we all need stimulation in this direction. As recently as last night I saw four people, in my small practice, people who were physically ill because of poorly integrated marriages, and the marriages were begun on a wrong score.

The thing that I think is most important, and a great deal of it was emphasized in our good President's address this morning, is that we get a proper attitude of humility, tolerance and relationship of spiritual values in ourselves, first, because many times the integrators have to be integrated and the projector reprojected before he can pass it on with the proper attitude, because the physician with the wrong attitude in conflict with the patient or the individual he is attempting to counsel will do more harm than good.

And, finally, to sum this up, remember, that we are only a very small and infinitessimal part of the whole scheme of things, but we do have the respect of the people that come to us for advice, and the casual, incorrect, or the assumed pious attitude, or the arrogant, belligerant attitude will do inestimable harm.

We are indebted to you, Dr. English, for a very excellent discussion and I am happy the program committee incorporated such a feature as this on the program.

Dr. M. A. Tarumianz (Farnhurst): I also enjoyed my friend Dr. English's discussion on a very important matter: counselling, premaritally and postmaritally.

It is a very rediculous situation throughout the country when you realize that one doesn't go into partnership in business without preparing himself in the field of his endeavor, yet the most important partnership in our life is marriage. How many of our young men and women are prepared to assume the responsibilities of such a partnership?

Maybe the time of the real family physician has passed. Maybe it is over. But I think it is time to rejuvenate the idea of the family physician, who knew all about the children, their positive and negative traits of personality, their make-up, and all such. They could give wholesome advice. No psychiatrist can give an individual who is utterly strange to him within the time of one interview the advice that a family physician could if he knew something about the family origin and the background of the children who have grown and become responsible individuals.

So from my viewpoint, insofar as I see the consequences of maladjustment in marital life, I see very little that we can do to prevent catastrophes of daily life, particularly in the middle age period. It is really sad when a man comes to you who has been married for twenty-some years and has lived with his wife in harmony, good or bad, where he has now reached a point where he can not tolerate the existence of that individual under the same roof with him. That is a serious thing.

Now, we know that evolutionary changes have something to do with that attitude. For the psychiatrist to attempt to bring these two together would require prolonged psychiatric interviews and treatment of both parties. Yet we know, also, that if these men or if that man had been prepared before he entered marital bonds he would not have had the difficulty. He would have known what to expect from such a partnership, and so I would say the lack of such knowledge is the main cause of marital disturbances in older people.

I am of the opinion, and I hope Dr. English will agree with me, that although the premarital physical examinations have some importance and some role to play, that that, in my judgment is not after all as important as pre-marital counselling. I think no one should enter into the bonds of matrimony unless he has a definite understanding of his own personality, of his own make-up, and also to know that he is going to marry someone who also has personality, who is also an entity per se, and not someone whom he can remodel to his liking, but that is what most of the men entering into marital life expect to do—to remould an individual, a personality, an entity, to their liking, forgetting that she also, in her own mind expects to do that very thing. There is a challenge between both of them and the end result is the number of divorces we have today.

I also agree with Dr. McGuire, that in addition to all our knowledge we should consider that there is a moral and spiritual issue connected with an individual's entering into the marital bond. It would be very wise that there is a consultation between the pastor of the individuals who are attempting to enter into this partnership and the family physician.

The last thing I can say is that there are some types of cases that the general practitioner should not attempt to handle by himself, because of lack of his experience and knowledge. He should not hesitate to refer the case to one who possibly has a little more knowledge and experience in that field.

I think if we do all of this we certainly can prevent many, many unfortunate, sad cases of let's say, alcoholism, divorce, economic distress, and everything that goes with failure of the individual in marital life.

Dr. English: I think that the discussants have brought out important points, and I want to thank them, very much. I would just make one more, myself, and that is that extending further the concept that marriage counselling is a very important preventive medical function, I am wondering if physicians could not be one of the sponsors or lend a certain impetus to making this more of a community affair. There should be in every community a place, a forum, where the family could and should be discussed. I think probably a most desirable accomplishment would be to have an educational institution in the community that would give people a chance to study the family, hear about the family and have speakers to discuss the family. Here, young people could learn something about the family and family life in a perfectly open and free manner, sponsored by education, by religious organizations and by the Medical Society. I am hoping, and I feel fairly sure, that communities are going to and must take this up in order that all young people learn more about this. The need is great because even if physicians do more marriage counselling, we are still not going to be able to meet the needs of all the people. And I think in line with the things said in discussion, many questions might be answered if there was a community organization that dealt with the family, its problems, and functioned all year 'round for anyone who needed help or information to understand more about happy and healthy family living.

FIVE WAYS TO KNOCK OUT TB

Earl Ubell*
New York, N. Y.

Somewhere in a poverty-stricken corner of the world, a child at this instant is coughing his life away with tuberculosis. In an era of advanced medical science, it would seem that his death is a heartlessly unnecessary event. But he will die, as will millions of adults this year and every year.

Even in these relatively wealthy United States, nearly 30,000 children and adults will die of tuberculosis in 1952. At least five per cent of these dead will be children under 15 years of age. The rest will be mostly those in the prime of life looking forward to their most productive years.

Help Fight TB

Buy
Christmas Seals

TB, regardless of what anybody tells you, is the No. 1 infectious killer in this country.

Yet science knows more about tuberculosis than perhaps any other germ disease. In fact, physicians have successful ways to treat it. But the disease marches grimly on. What then is needed to conquer TB?

There are five weapons which aimed together at TB can make it a rare disease on earth. A cure is only one of the guns. A cure will not eliminate an infectious disease. Penicillin, which cures syphilis, has not eliminated that disease. These are the guns that should be leveled against TB:

1. The elimination of poverty. Poverty is the ally of tuberculosis. Slum areas are foci for infection. From these centers TB sends out tentacles to other parts of cities where poverty is not a problem. Eliminate poverty, and you are well on the way to the elimination of TB.

2. The development of a superior vaccine. A vaccine is really a "Big Bertha" against an infectious disease. By stimulating the immunity-producing mechanism of the body a vaccine could protect a human being against massive invasions of germs. A good vaccine—coupled with a vaccination program as strong as that for smallpox—would make tuberculosis as rare as pox.

At present the best vaccine is known as BCG—the Bacillus of Calmette and Guerin. It is a derivative of TB germs. It does not give protection in every case nor does it protect permanently. Hence it is recommended only for special uses.

3. The development of more effective therapy—of a "cure." This gun is so far the most highly developed. Three approaches to the treatment of TB give victims the best chance to get well that they have had in years. Bed rest, surgery, and the anti-TB drugs are curing more people than ever before. But treatment alone will not rid the nation of TB.

4. A method for uncovering "silent" cases cheaply, easily, and quickly—those early cases with no apparent symptoms as yet. X-ray pictures, which are now being taken by the millions, are so far the best method for discovering cases among the general public. Mass X-rays are trying to uncover some 150,000 persons who may not yet know they have the disease and who with the 250,000 reported cases bring the nation's case load to 400,000. A blood test to aid diagnosis is under investigation.

5. More hospital beds. Perhaps this is the saddest lack of all, because all you need for a hospital is money and people—and the

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*Science writer, New York Herald Tribune.

nation has plenty of both. The effect of hospital shortages is clear. Many patients who should be hospitalized are left to roam and pass their infection on to others; sometimes leave the hospital before their disease is completely arrested.

There you have them, the five big guns that need to be leveled at tuberculosis. The important thing is to aim them at once and score the bull's-eye that will make TB a rare disease.

Money is needed to carry out the research for a better vaccine, for more effective therapy, and for methods for discovering cases. Money is needed for educating the public to the necessity for new and better hospitals and for the elimination of slums.

Part of the money to carry on these programs is raised each year in the Christmas Seal Sale. The 3,000 associations affiliated with the National Tuberculosis Association raise around $20,000,000 a year for prevention, control, education, and research programs. Out of its annual budget of approximately $1,530,000, the national office allocates roughly one-sixth for research purposes.

The Christmas Seal campaign can't raise the money to take care of the patients; it can only hope to raise enough to be able to train the five big guns of TB control on the right targets.

SUSSEX PHYSICIANS' TELEPHONE EXCHANGE

Since August 1, 1952, a physicians' telephone exchange has been in operation by the Sussex County Medical Society. Twenty-two physicians of Sussex County will have their calls taken care of by the three hospitals in the county. Physicians participating will notify the hospital nearest to them when they are away from their office, where they can be located, and the switchboards of the three hospitals in Sussex County will take care of calls for the physicians during their absence. It is hoped that this will improve the service being rendered by the physicians, and an effort will be made to have each town covered at all times. In case of emergencies, it is planned later to inaugurate an emergency service whereby physicians can be located for emergency calls when the usual family physician is not available. Each doctor participating will insert in the telephone book after his name the information that, if there is no answer to his telephone, the hospital closest to him be called for information regarding his absence and time of return.

The physicians participating are as follows:

Nanticoke Memorial Hospital, Seaford, will take care of calls for—

Dr. Graylock C. Noble	Greenwood
Dr. W. P. Ellis	Laurel
Dr. Charles M. Moyer	Laurel
Dr. Arnold H. Williams	Laurel
Dr. James E. Marvil	Laurel
Dr. Robert L. Dickey	Laurel
Dr. R. H. Beckert	Bridgeville
Dr. John Lynch	Seaford
Dr. Leland Fox	Seaford
Dr. Ervin Stambaugh	Lewes

Milford Memorial Hospital, Milford, will take care of calls for—

Dr. Thomas J. Tobin	Milton
Dr. G. M. VanValkenburgh	Georgetown
Dr. Samuel Marshall	Milford
Dr. Lawrence Fitchett	Milford
Dr. O. A. James	Milford
Dr. Kaden Tierney	Milford
Dr. James B. Homan	Milford

Beebe Hospital, Lewes, will take care of calls for—

Dr. John Annand	Georgetown
Dr. Daniel Paul, Jr.	Georgetown
Dr. Robert Klingel	Rehoboth
Dr. Ervin Stambaugh	Rehoboth
Dr. Virgil Hudson	Millsboro
Dr. James Beebe, Jr.	Lewes
Dr. James E. Marvil	Lewes

Editorials

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WORTH EXPLORING

The success that has attended the Maryland plan for medical care of the medically indigent has attracted national attention. Now from Maryland comes a new approach to the problem of medical care of the lower-income group that may turn out to be worth exploring. Till details are available no opinion can be expressed. The preliminary story, as given in the *Baltimore Sun* of October 27, 1952, follows:

The Baltimore City Medical Society has appointed a committee to study a local physician's proposal of a way for doctors to scale their fees in accordance with the patient's income.

The physician, Dr. J. Wesley Edel, has worked out the plan for a "medical fee co-operative," to be "organized, regulated and subscribed to by both physicians and patients."

The aims are to make private medical care less burdensome to lower-income groups and to eliminate any possibility of socialized medicine.

The patient's fee would be based on his income and number of dependents.

These two factors would be worked out on a scale or chart—a "discount calculator"—showing the percentage of deduction for each fee at each classification level.

Patients desiring the discount advantage would fill out a financial-statement form obtained from their physician, have it notarized, and send it to the secretary of the co-operative.

He would then receive a membership card stating his classification. The card would be good at the office of any physician member of the co-operative.

The co-operative would be a non-profit organization, with dues of $5 per year for physician members and $1 per year for patients. This could defray costs of operation, printing and mailing.

The scope of the plan would include only fees involved in private medical practice — physicians and surgeons.

The co-operative would be set up under the sponsorship and supervision of the Baltimore City Medical Society, and initially the president of the society would appoint representative physicians and laymen as directors.

BOOK REVIEWS

Textbook of Refraction. By Edwin Forbes Tait, M.D., Associate Professor of Ophthalmology, Temple University School of Medicine. Pg. 418, with 93 illustrations. Cloth. Price, $8.00. Philadelphia: W. B. Saunders Company, 1951.

This book is a practical treatise on clinical refraction, and pre-supposes a considerable knowledge of optics and physiology on the part of the reader. A large part of the book deals with muscle physiology, muscle abnormalities, and orthoptics, possibly beyond the point which might be expected to be found in a textbook of refraction. The material is, on the whole, accurate and covers all phases and methods of practical clinical refraction. The author believes that cycloplegia has a place in refraction, but should be individualized, since he believes that many, if not most, individuals over 35 years of age can be refracted adequately, if not better, without cycloplegia. The arrangements of the chapters, which is calculated to touch on every phase of the subject briefly before getting down to the real fundamentals of refraction, makes for some repetition and increase in the size of the work. The author concludes with an excellent outline of a system of refraction, and methods of examination, which effectively summarizes the preceding material, as well as the individual methods preferred by the author. The book is, in general, well written, the format clear, and the illustrations and tables, in general, well chosen.

The Origin Of Life And The Evolution Of Living Things. By Olan R. Hyndman, M.D., Associate Professor of Neuro-Surgery, University of Colorado. Cloth. Pp. 648. Price, $8.75. Philosophical Library, New York: 1952.

The author undertakes to present his theory of evolution of life and he postulates that the origin of living substance is on an energy-transformation basis. He suggests a strong belief in the environmental influence on adaptation and the hereditary development of form from a microscopic bit of chromatin.

Since the chromatin governs the cell cytoplasm in every detail, any reaction of the latter must, of necessity, stimulate the chromatin. The chromatin responds to maintain integrity of the cytoplasm and differentiates to maintain and perpetuate the integrity of the changing cytoplasm. The chromatin always responds to chemical changes in the cytoplasm.

The centrosome in the nucleus of a cell is composed of an integer or intergers (genes) whose function during the evolution of the cell, becomes delegated to the coordination of cell cleavage only when such a cell has ripened.

The theory of specific environments of origin in respect to parasites and saprophytes is shown to be an integral part of the main theory.

This book minutely reviews the various theories of evolution, the field of genetics, and the knowns and the unknowns related to heredity and embryogenesis. The author philosophizes extensively throughout the text and attempts to prove his theories by presenting a great deal of pertinent historical background. The lengthy explanations and constant repetitions are confusing when one considers the nature of the subject matter which is, at its best, based on imagination, theory, theology, probability, prophesy, and hormones, rather than on scientifically proven objective data. The multiplicity of headings and subheadings within the various sections and chapters of the book adds to the confusion.

This is not a text book on evolution but a presentation of a new theory. It contains a great deal of interesting material which should be found valuable by students of genetics and lovers of philosophical discussions as to the evolution of life and man's purpose in the universe.

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LABORATORY TESTS IN THE STUDY OF ATHEROSCLEROSIS

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Discovery of a diagnostic test for atherosclerosis would be as welcome as the development of a reliable test for cancer.

At present, the patient is commonly investigated for atherosclerosis after he has developed manifestations of the disease, such as myocardial infarction. Prior to the appearance of signs and symptoms of the disease physicians usually assume that any person over forty years of age has some degree of vascular damage but few doctors go to the trouble to ascertain the presence, extent, degree, and localization of vascular alterations.

It might be well to distinguish between the asymptomatic existence of atherosclerotic plaques, the so-called *atherogenesis*, and the active atheroclerotic disease with its various signs and symptoms, shortly spoken of as *atherosclerosis.*

After a patient has had an episode of myocardial infarction or a cerebro-vascular accident, or after he has developed intermittent claudication, the investigation for and diagnosis of atherosclerosis is comparatively easy. Multiple physical aids are available for the study of such patients. A test indicative of the presence and degree of atherogenesis would be of great value. The results of periodically performed tests could be utilized to prognosticate the development and the course of atherosclerosis, such as the occurrence and recurrence of coronary occlusion.

Multiple attempts were made to find a suitable test. Since cholesterol has been demonstrated in human atherosclerotic lesions and since atherogenesis may be induced by cholesterol feeding to many animals, most of the tests recommended till now revolve around the assay of blood cholesterol. Let us review and evaluate the available methods.

1. Blood Cholesterols

Many scientists used to believe, and some still believe, that a temporary or permanent increase in blood cholesterol is responsible for atherogenesis. Some facts are known today: Persons with familial hypercholesteremia or with blood cholesterol elevation incidental to disease (hypothyroidism, lipid nephrosis, etc.) are more likely to develop atherogenesis and atherosclerosis than persons whose hemocholesterol is normal. There is a certain parallelism between the height of hypercholesteremia and degree of vascular alterations, in these people. However, persons with normal blood cholesterol can and do develop atherogenesis and even atherosclerosis, and patients with the active disease have often blood cholesterols which are well within normal limits. Patients with coronary atherosclerosis have higher blood cholesterols than patients with atherosclerosis of other vessels, for example, of the cerebral arteries. After myocardial infarction due to obliterating atherosclerosis of a coronary artery the blood cholesterol level first drops and later rises. Therefore, statistics on blood assays in patients with atherosclerosis have little value unless accompanied by detailed information as to the predominant site of vascular lesions and as to the time which elapsed between the onset of clinical manifestations and blood letting. Various methods of cholesterol determination yield different results. Even the same method might not give identical results when employed by several technicians. Various institutions accept different values as "normal." Therefore, all reports should refer to the method used and state the range of values considered to be normal.

Some students think that either free cholesterol or the esterified cholesterol is more significant than the sum of both, that is the total cholesterol. This has not been established as a fact. The mean average blood cholesterol level of a series of patients with atherosclerosis, namely with coronary disease, is significantly higher than the mean average level of a comparable series of persons who are apparently free of vascular alterations. There is a large overlap of the normal and abnormal range. Thus, the blood cholesterol assay in a single individual is of limited value. Still, such assay should be part of our routine examination: While a normal result has little significance, hypercholesteremia has a certain prognostic significance, especially in a young person.

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2. Cholesterol Tolerance

Repeatedly, attempts were made to develop a cholesterol tolerance test patterned after the widely practiced glucose tolerance tests. In some procedures, the oral administration of doses up to 2 Grams were recommended. Even this amount is insufficient to influence the blood cholesterol level. And this is an excessive amount for it corresponds to a meal consisting of two eggs, eight pats of butter, four quarts of milk and one pound of fat meat. In some tests, cholesterol was replaced by a high fat—high cholesterol meal. Notwithstanding isolated reports to the contrary, the majority of investigators agree that the short-term cholesterol tolerance tests have no value. Intravenous injection of cholesterol might endanger the blood vessels. Such cholesterol administration does not shed light on the individual's ability to metabolize cholesterol.

3. Cholesterolysis and Cholesterol Saturation

The possibility that each blood serum has an individual ability to hold cholesterol in colloidal suspension prompted the search for pertinent tests. Several modifications of the cholesterolysis test are known. The basis of such tests is the assay of cholesterol in blood samples before and after addition of a weighed amount of cholesterol, and before and after incubation. In the saturation test, cholesterol is added to one portion of a serum sample and assayed in the filtrate, after incubation. Normally, there should be an increased amount of cholesterol in such preparation in comparison to an untreated portion of the serum sample. The fallacy of these tests lies in the fact that cholesterol is as insoluble in blood serum as it is in water. The results are worthless.

4. Cholesterol-phospholipid Ratio

The concept that hypercholesterolemia alone is of etiologic importance in atherogenesis became untenable when it was disclosed that many patients with atherosclerosis have normal hemocholesterols. A new concept became popular, namely that the qualitative state of blood cholesterol is more important than its quantitative increase. It was postulated that phospholipids and albumin are natural stabilizers of colloidal serum cholesterol.

Many investigators prorate the amounts of cholesterol and phospholipids. We can determine free and combined cholesterol which when added give us the total cholesterol value; we can determine lecithin, cephalin and sphingomyelin which make up the total phospholipids. We thus can place either of the seven values (five components and two total values) in the numerator or denominator. We can express the values in milligram per 100 ml. of blood (mg.%) or in millimols per liter, that is in milliequivalents (mEq.) Of all possible indices, four became popular: TC/LP mg%, TC/LP mEq, LP/TC mEq, and LP/FC mEq. (CTC, total cholesterol; FC free cholesterol; LP, lipid phosphorus, usually calculated as lecithin.) Any ratio of two variables represents an arbitrary value. Such ratio can remain normal although both components may be altered in one of two directions. The index can be abnormal with a shift of either or both components. While the hemocholesterol of each individual is fairly constant over a period of time, the phospholipid level fluctuates considerably from day to day. If we mentioned that different methods of cholesterol assay give different results it is only fair to point to even greater variations in the results obtained with various methods for phospholipid determination.

Alpha toxin of Clostridium welchii contains a powerful lecithinase. If the toxin is added to serum the latter will become turbid within two hours. The degree of turbidity can be measured. The speed at which cloudiness occurs reflects the molar cholesterol-phospholipid ratio. The final degree of turbidity corresponds to the total amount of cholesterol in the serum.

In experimental animals, namely in cockerels, there is good correlation between the TC/PL ratio and the degree of atherogenesis. The same is not true of human beings. Usually, cholesterol, phospholipids, and fatty acids go parallel. Many patients with atherosclerosis have normal blood cholesterol and also normal phospholipid. Others have increased blood cholesterol and increased phospholipids as well, and consequently they have a normal ratio. Apparently, in these patients, the phospholipids failed to provide the theoretically postulated protection through cholesterol stabilization. The assay of both lipids and the reliance on one or the other index becomes a matter of belief that such index is of prognostic or diagnostic value. This conviction is not shared by the writer. What has been said about the increase of blood cholesterol in patients with atherosclerosis holds true for the lowering of the total cholesterol/total phospholipid ratio: While these blood chemical shifts are fairly characteristic for large series of patients they may or may not be present in the individual patient.

5. Lipogram

The simultaneous assay of all lipid fractions is spoken of as the lipogram. It has long been known that cholesterol is not the only lipid present in atherosclerotic lesions. It also has been known that patients with hypercholesteremia commonly have hyperlipemia. Some investigators began to follow besides the free, combined and total cholesterols the levels of phospholipids, fatty acids, neutral fat, and total lipids. Experimental atherogenesis can be induced by feeding rabbits and other species pure cholesterol, but it cannot be produced by feeding of other pure lipids. Cholesterol when fed suspended in vegetable oil is more rapidly resorbed than if fed in powdered form. Although the introduction of vegetable oil enhances the development of hypercholesteremia and atherogenesis we can not label the oil as atherogenetic. In man there is considerable, and often unpredictable, variation of most of the blood lipid fractions. This is true of repeated fasting blood lipid values and even more so of postprandial levels. Therefore, the practical significance of the lipogram is limited, for the time being at least.

6. Chylomicron Index and Curve

Chylomicrons are macromolecular bodies larger than 0.5 micron and visible in dark field preparation by 1900 fold magnification. They contain largely fat. The presence of cholesterol within these bodies is disputed. Since macromolecular substances other than cholesterol (for example, cellulose, sodium stearate, etc.) were successfully applied by the intravascular route to produce alterations not dissimilar to early atherogenesis, chylomicrons were implicated in the etiology of atherogenesis and atherosclerosis. With aging there is a tendency to higher chylomicron counts, and counts are higher in patients with atherosclerosis. The differences between the chylomicron index of a series of patients with atherosclerosis and that of series of healthy persons is statistically far greater than differences in blood cholesterol levels of the same series.

After ingestion of 0.5 Gm. of fat per Kgm. body weight, the chylomicron count normally rises and reaches a maximum in 2 or 3 hours, then returns to the original level within 5 hours after the meal. In older persons the peak of the curve is delayed and up to six times higher, and the return to pre-prandial level is slow and might take a full day. Since atherogenesis is prevalent among the aged, there is a certain parallelism between chylomicron curves and degree of atherogenesis. Furthermore, since a person's ability to handle neutral fat and to handle cholesterol is very often the same, the plotting of chylomicron curves from repeated counts sheds some light on the individual's ability to metabolize all lipids. Although the ingestion of cholesterol itself does not influence chylomicron counts, there seems to be fairly good correlation between chylomicron counts and atherogenesis, or even atherosclerosis, in man.

7. Lipoprotein Molecules

The concept that macromolecular substances play an important role in the etiology of atherogenesis and atherosclerosis, and the knowledge that most of the blood cholesterol is linked with protein fractions led to the study of lipoproteins. By utilizing differences in density and migration rate of lipids and lipoproteins a method was developed to measure the flotation rate (f) of molecules. The readings are expressed in Svedberg units (S.) For the sake of brevity one speaks of *S f* molecules. These can be separated by analytical ultracentrifugation and classified.

An increase of certain lipoprotein fractions, namely of the *S f* 10-20 order, was found very frequently in the serum of patients with atherosclerosis and in that of rabbits with induced atherogenesis. Like the quantity of chylomicrons, the molecules of *S f* 10-20 density appear more numerous with advancing age. Over a long period of time, the amount of these molecules can be influenced by diet, just as one can regulate the amount of blood cholesterol. Postprandially, there is an increase of *S f* 20-40,000 molecules but not of the *S f* 10-20 class. In patients with coronary atherosclerosis there is fairly good correlation between the amount of these low-density molecules and blood cholesterol level. The protein fraction in the *S f* 10-20 complexes is mainly beta-globulin and also alpha-globulin. There is not only correlation between the concentration of *S f* 10-20 molecules and hemocholesterol but also with the amount of serum beta-globulin. Blood cholesterol and beta-globulin determination might replace the very expensive ultracentrifugation where one is concerned with *S f* 10-20 molecules only. For evaluation of the complete spectrum of lipid and lipoprotein molecules ultracentrifugation is still indispensible.

8. Cholesterol Partition from Lipoproteins

Cholesterol can be liberated from lipoprotein complexes with the aid of saponin. With such cholesterol partition method marked differences were found in the amount of freed cholesterol in the blood of patients with atherosclerosis and that of healthy persons. The method has not been widely enough applied by multiple groups of scientists. It seems, however, that conclusions reached for series of people will not necessarily apply to the individual.

9. Clearing of Serum

After a fat-rich meal or after ingestion of fat alone the blood serum becomes milky and remains so for a varying length of time. This turbidity is caused by an increase of large molecular particles, lipids and lipoproteins. Injection of heparin and, possibly, of some other substances results in clearing of the serum. Ultracentrifugal studies disclosed that this clearing is due to a breakdown and transformation of giant molecular complexes to smaller ones. Serum of persons treated with heparin contains a clearing factor. When such serum is added to the serum of other persons these sera will clear at varying speed and to varying degree. The serum of normal persons shows more clearing than the serum of patients with atherosclerosis. The translucence can be followed nephelometrically and thus study of the clearing phenomenon might become a routine laboratory procedure. It might serve as indicator of an individual's ability to metabolize lipids and lipoproteins and thus provide us with broader information than chylomicron curves.

10. Electrophoresis

Those who implicate low-density lipoprotein molecules in the etiology of atherogenesis will admit that there is again an overlap in the range of normal and abnormal values and that there is a "physiologic" increase in the concentration of these molecules with advancing age. In other words, what has been said of hemocholesterol levels and of chylomicrons is also valid for *S f* 10-20 molecules. The presence of a large number of *S f* 10-20 molecules alone is not a measure of the degree of atherogenesis. As long as such molecules are present in the face of absence of vascular alterations in some persons one is not permitted to conclude that these molecules alone are the causative agent of atherogenesis. One has to assume that the appearance of cholesterol or lipoprotein complexes within the vessel wall is determined by factors other than the quantity of either cholesterol or *S f* 10-20 molecules in the blood stream. Plasma colloids are held in suspension by albumin and, supposedly, by phospholipids. Since the low-density lipoprotein molecules contain globulin fractions, namely beta-globulin, it appears that the relation between serum albumin and beta-globulin might be important. It seems that in discussing atherogenesis we pay much attention to the dietary and blood lipids and none to the dietary and blood proteins. With advancing age, there is a tendency to shifts in the various protein fractions, generally in the direction of absolute hypoalbuminemia. In patients with atherosclerosis, absolute hypoalbuminemia and relative hyperglobulinemia are common. Considering again the fact that beta-globulin is the main constituent of the molecules of the S *f* 10-20 order, electrophoretic studies of human blood serum might be a valuable aid in the study of atherogenesis and atherosclerosis.

Lately, electrophoresis has been adapted for lipids. In the very near future, combined electrophoresis—paper chromatography methods will enable us to assay simultaneously serum proteins and serum lipids.

Discussion

Several of the listed tests will reveal significant blood chemical or physico-chemical deviations from the norm if applied to series of patients and expressed as mean averages. For the evaluation of the individual but few tests are available, and only grossly altered results can be utilized diagnostically, and, if repeated, prognostically.

To the researcher, all the methods reviewed provide valuable tools, with the exception of cholesterolysis and saturation tests and possibly the cholesterol tolerance tests. For the latter group of tests there is still some hope: They might be applicable after the hemocholesterol has first been depressed to the basal or endogenous level. The practicing physician hardly ever has access to the ultracentrifuge and only seldom will he order a lipogram. The time required for such studies, the amount of blood needed, and the financial costs will be considered. Upon elimination of these four groups of tests there are still six tests left from which the practitioner can make a selection.

For the diagnosis of atherogenesis I would recommend a blood cholesterol determination and a chylomicron count. *For the prognosis,* that is the probability of atherosclerosis I would recommend periodic repetition of the blood cholesterol determination and of the chylomicron count, and I would add repeated electrophoretic studies to evaluate serum albumin, alpha- and beta-globulin.

At present, but *three methods of prevention* of atherogenesis and atherosclerosis are available. (1) One might try to decrease the blood cholesterols either by strict elimination of all cholesterol and other lipids from the diet, or by oral administration of chemicals which prevent or reduce intestinal resorption of cholesterol, or by a combination of a partially restricted diet plus medication. In such a case, repeated blood cholesterol determination will serve to evaluate the therapy. (2) One might try to stabilize blood cholesterol and/or lipoprotein molecules by an increased dietary supply of methionin which is the precursor of lecithin, and of proteins, or by the use of the various lipotropic drugs (cholin-methionin-inositol-betain) which often cause a rise in blood phospholipids and commonly result in readjustment of the proportion between serum albumin and globulin through stimulation of liver cells freed of neutral fat. In such cases, those who believe in indices will follow the cholesterol-phopholipid ratio while those who do not will rely on protein fractionation as yardstick of the treatment. (3) One might try to break down the large molecular complexes into smaller ones and clear the serum by heparin injection. In such a case, one will use the analytical ultracentrifuge and, where this is not available, one will determine the clearing of the serum with the aid of nephelometer readings.

The reader might share the writer's impression: At the start of this paper it seemed that no laboratory method is worthwhile for the study of atherosclerosis, but in the end it appears that a pretty good selection of tests is now available, especially for observation of the progress of atherogenesis and for evaluation of preventive-therapeutic measures.

CLINICAL MANIFESTATIONS OF ARTERIOSCLEROTIC DISEASE

Att Tormet, M. D.*
Lewes, Del.

General Considerations.

Arteriosclerosis is a universal disease, and yet occupies a singular place in the multitude of human ailments, in the respect that we seldom make a special effort to diagnose it in our daily clinical practice. A chance finding may bring it to our attention, we sometimes assume its presence by the advanced age of our patient, or we may be hurriedly summoned to save a person who has had one of the dreaded complications of arteriosclerosis—a stroke, for example. If we do feel the need for a special diagnosis of this disease we find that our methods are inadequate and that we have no diagnostic laboratory tests.

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*Resident physician, Beebe Hospital.

There is also a feeling among the doctors that the establishment of this specific diagnosis is, perhaps, not going to help anybody very much, since there is so little we can do about it. To this could be answered that the main reason for this pessimistic attitude towards the treatment is the lack of proper diagnostic techniques. Different therapeutic measures and agents have already been proposed, but we have no means of measuring their effect on a patient, except by clinical impression or statistical studies, of which neither is easy. The need for diagnosing or excluding arteriosclerotic disease in our daily practice is not so rare. The surgeons are interested in a more accurate evaluation of the vascular status of their patients undergoing surgery, in order to have an idea of how well shock, blood loss or dehydration can be tolerated. The medical men well know that arteriosclerosis can produce a large variety of confusing clinical pictures which, at times, remain unrecognized.

Turning now to a brief study of these various clinical pictures it might be well, first, to bring out the known fact that generalized arteriosclerosis can be present in a person for a number of years without giving rise to any symptoms or signs. It becomes a clinical disease when it produces complaints. Most frequently the onset of symptoms is insidious. A previously healthy and vigorous person may observe that his intellectual powers are gradually declining, his senses becoming less acute, or the performance of his muscular system less accurate and efficient. He may seem to age visibly over a span of a few years and yet not suffer ill health. We speak of the onset of senility but we do not know with certainty to what extent the advent of senility is separate and distinct from the process of arteriosclerosis. In less fortunate persons the disease progresses rapidly in some part of the body, leading to violent symptoms and appalling disability.

The amazing variety of symptoms and signs manifested by arteriosclerotic disease derive from only a few basic morbid changes in the vascular system. These are loss of elasticity and gradual thickening of the arterial wall. Complicating factors are rupture or closure of the vessel.[1]

The Heart and the Great Arteries

Loss of elasticity of the arterial wall, especially of the aorta, leads to an elevated systolic blood pressure with slight or no lowering of the diastolic pressure.[2,3] This finding, of course, occurs also in other conditions (those attended by high cardiac output), and should be given significance only after due consideration. The exaggerated pressure changes together with the impaired quality of the arterial wall are to be blamed also for the tortuosity of the peripheral arteries so commonly seen in arteriosclerotic persons.[2] Besides the pressure changes the loss of elasticity of the arterial wall is followed by increased velocity of the propagation of the pulse wave. The measurement of this velocity is not practiced clinically, but could be of considerable value in estimating the progression of the disease in a person or evaluating the effect of treatment.[2] This change in the velocity of the pulse wave can sometimes be demonstrated clinically by the finding of asynchronous pulses in the two arms or legs. Provided that the presence of an aneurysm has been excluded the out-of-phase pulses must have been caused by unequal distribution of arteriosclerosis in the two extremities.

Loss of elasticity in the aortic wall can also be expected to lead to some reduction of cardiac reserve by imposing an increased load upon the heart. This happens because the aorta no longer distends readily to accommodate the blood expelled by the heart, which has to move an increasing column of blood with each contraction. This involves added work.[2]

Arteriosclerosis can produce stenosis of the aortic valve, giving rise to a characteristic systolic murmur together with reduction in pulse pressure.

Extensive changes in the aorta, if attended by hypertension, can lead to aneurysm. The arteriosclerotic aneurysm shows a predilection for the descending portion of the aorta but can also be found in the major branches of that vessel. If there is extensive atherosis of the medial layer of the aorta a dissecting aneurysm can occur and may present a clinical picture rather difficult to diagnose. Of major significance here is the finding of arterial obstruction in some of the branches of the aorta. The blood pressure can stay high for a variable length of time, but falls inevitably when leakage of blood from the aneurysm occurs. Because of the confusion with myocardial infarction an electrocardiogram here may be of considerable diagnostic help.[2]

Loss of cardiac reserve brought about by the increasing rigidity of the aorta would probably not, by itself, lead to any disability, or cause enlargement of the heart were it not for the fact that the coronary arteries, at this stage, are apt to be affected likewise by arteriosclerosis, gradually choking off blood supply to the myocardium. Enlargement of the heart then ensues, murmurs of inadequacy of the valves develop, and the apical impulse often assumes a slow heaving quality which can be explained as due to inertia of the increased mass of blood in the arterial system that the heart is called upon to set in motion with each beat. Gradually symptoms of failure develop: increasing breathlessness upon hurrying, later even at rest, swelling of the ankles or feet, chest pains, pressure and discomfort in the liver region after meals. Some of the symptoms may be difficult to recognize. Thus there may be a tendency to catch colds or respiratory tract infections, or the patient may want treatment for a chronic cigarette cough—conditions that can possibly be caused by a congested state of the respiratory membranes secondary to chronic congestive heart disease.[2] The same seems to apply to some cases of the so-called intrinsic or bacterial asthma of the elderly that are treated as true allergies. There may be absence of gross signs of cardiac disease but the frequent presence of chronic respiratory infection in these cases should make one curious as to why the patient has such an infection. The electrocardiogram or circulation time studies may often indicate that there is an important component of cardiac disease present.

Coronary arteriosclerosis manifests itself most dramatically in acute ischemia or infarction of the myocardium. The clinical picture produced is too well known to need repetition here. The infarction frequently leads to permanent electrocardiographic changes which then later serve as valuable evidence of the existence of coronary arteriosclerosis in the person. There are other EKG signs, somewhat less dependable: cardiac arrhythmias and the different types of conduction blocks. They need more careful interpretation and, of course, the exclusion of digitalis action.

Attacks of the Adam-Stokes syndrome are usually indicative of arteriosclerotic heart disease.

An imposing array of specialized equipment has been devised for diagnostic work in cardiology. Instruments such as the ballistocardiograph, spatial electrocardiograph, radiocardiograph, electrokymograph, phonocardiograph, arterial and venous sphygmograph can be used with advantage for the detection of various cardiac disturbances, but they are of little help for the early diagnosis of arteriosclerotic changes in the coronary arteries.

A valuable diagnostic procedure, however, has been added to our armamentarium, in recent years, in the form of the Master's two-step exercise test.[4] It was designed to give objective evidence of early coronary insufficiency, and it has been taken into widespread use.

Hypertension and the Kidney

Although the relationship between arteriosclerosis and hypertension is not definite or predictable, we can assume the presence of arteriosclerosis in an elderly hypertensive patient, especially if that person is obese or has diabetes. The malignant form of hypertension sooner or later produces severe necrotizing arteriosclerotic lesions in the smaller arteries of different organs, especially the kidney, leading to death by cerebrovascular insult, uremia, or heart failure.[5] It seems to be the belief now that malignant hypertension is etiologically not different from the benign form, but that any kind of hypertension can develop into the malignant type if the blood pressure becomes high enough. Just when the malignant type starts depends on individual differences, but usually the clinical signs appear when the diastolic pressure exceeds 130 or 140 mm Hg.[5]

It has repeatedly been reported that simple hypertension does not necessarily cause cardiac enlargement even after several years' duration.[6,7] Cardiac enlargement and the appearance of congestive failure, when they do occur, probably reflect the state of the coronary arteries. Together with these changes the urinary findings tend to become abnormal, and the urea level in the blood may begin to rise, sometimes creating the impression of renal disease being the cause of patient's hypertension. Once the hypertension has entered the malignant phase and produced extensive damage to the kidneys it is usually impossible to determine whether the patient has renal or essential hypertension, unless we know the history of the case.[5]

THE BRAIN.

Next to the heart the most sensitive organ to arteriosclerosis is probably the brain, its involvement likewise leading to a multitude of clinical manifestations. The most typical of these are the cerebrovascular accidents, namely cerebral hemorrhage and cerebral thrombosis. Embolism of the cerebral vessels has been estimated to have an incidence of only 3 per cent of all cerebrovascular accidents, being more frequent in children on account of rheumatic heart disease and subacute endocarditis.[1]

Cerebrovascular accidents are characterized by certain syndromes of neurological findings, by which localization of the lesion is usually feasible. Cerebral thrombosis is a more frequent occurrence than cerebral hemorrhage High blood pressure favors the occurrence of both, but tends to be more severe in cases of cerebral hemorrhage. The latter carries a much higher mortality, and for the matter of prognosis it is usually desirable to differentiate the two forms of stroke. The following points of difference may be usable: 1) A bloody cerebrospinal fluid is diagnostic of cerebral hemorrhage. 2) Severe headache, vomiting and stiffness of the neck favor the diagnosis of cerebral hemorrhage. 3) Convulsions occur twice as frequently in cerebral hemorrhage as they do in cerebral thrombosis. 4) The presence of Cheyne-Stokes breathing, conjugate deviation of the eyes, quadriplegia, or positive Babinski's sign, favors the diagnosis of cerebral hemorrhage. The same can be said of prolonged coma which, together with a steadily rising temperature is a grave prognostic sign.[1]

Hemiplegia and disturbance of the speech function are the most common clinical signs of stroke. If the lesion is in a relatively unimportant part of the brain there may not be any focal neurologic signs. Instead, the patient may have a short period of unconsciousness, dizziness, or mental confusion, followed by apparent recovery, or there may follow some degree of mental crippling. At times, the recognition of such "silent" cerebrovascular accidents, which may involve only a small portion of the brain, can be extremely difficult. Of course, it would be preposterous to diagnose every inexplicable fainting spell, giddiness or momentary disorientation in an elderly person as stroke. On the other hand, these incidents do not often receive the attention they deserve. The diagnosis of a small cerebrovascular accident would perhaps be justified if we get information from the patient's family members that, after a sudden spell of ill-being, the patient showed lasting subtle or gross changes in his manners, habits, or his general personality makeup. Sometimes a latent psychotic tendency can become clincally manifest.[8]

Personality changes like forgetfulness, suspiciousness, neglect in the personal appearance, irritability, etc., are something rather common in aging persons. Even if it is fairly certain that these traits can become manifest without any gross arteriosclerosis of the cerebral arteries, the latter process surely must be an important factor in the premature development of the above personality changes.[9]

When some of the senile personality traits become disturbingly prominent we speak of senile psychoses. Regardless of the listing of different types of senile psychoses in the literature they all run together on a common pathological background, and can either be true senile or arteriosclerotic by nature. The senile dement, when under proper care can live longer than anyone expects.[1, 9]

Other manifestations of cerebral arteriosclerosis (or senility) include tremors, clumsiness or ataxia, uneven, unequal or irregular pupils, sluggish or absent tendon reflexes, and loss of weight. Senile tremor can develop into a clinical picture somewhat suggesting Parkinsonism, but does not have the characteristic rigidity, and the onset of tremor is usually late in life.[1,9]

Elderly arteriosclerotics are frequently also subject to various neuralgic pains. Trigeminal neuralgia, for example, seldom appears before the age of fifty. Although the etiology of this disease is still obscure, it seems acceptable that ischemia of the Gasserian ganglion from arteriosclerotic changes in the cerebral vessels may be an important etiologic factor.[1]

The Eye

A fair indication of the state of the cerebral vessels in a person can be obtained by examining the eyegrounds. This is not always true, however. The typical ophthalmoscopic findings of retinal arteriosclerosis are: 1) Easy recognition of the arteries due to a silvery streak of light reflection along the artery. 2) Tortuosity, narrowing and irregular caliber of the arteries. 3) Compression of vein at the arterio-venous crossings. 4) Small hemorrhages or exudates may be present. 5) Choroidal vessels show through as a whitish network. 6) Streaks of black pigment along the choroidal vessels (Siegrist streaks), or pigment spots with pale halo around them (Elschnig patches).[5,10] Hypertension, if present, influences the appearance of the arteriosclerotic retina. Tortuosity may be absent, the arteries may come to look like narrow copper wires. Malignant hypertension is characterized by papilledema and more widespread blotches of hemorrhage or extravasation as those seen in benign hypertension.[5]

Sudden blindness in one eye may be due to thrombosis of the central artery, producing characteristic paleness of the retina with the cherry-red spot of choroid showing through at the macula, where retina is thinnest. The arteries look empty and segmented, sometimes showing markedly irregular caliber.[10]

At times retinal arteriosclerosis is secondary to previous inflammatory processes in the eye, and does not permit conclusions of general nature to be drawn.[10]

The Extremities.

There remains a large group of people whose arteriosclerosis is mainly limited to the extremities, especially the legs. A severe grade of arteriosclerosis can be present before a person presents any complaints. These may be: coldness of feet, numbness and tingling, poor healing of minor injuries, pain upon walking, or persistent pain even at rest, burning or shooting pains in the entire leg, gangrene.

Diminishing blood supply to the extremities leads to certain physical signs. Usually the earliest to appear are trophic changes of the skin, or thickening and deformity of the nails. Epidermophytosis may be present. Due to coldness of the feet the patient may apply heat to the extremities which, next to intercurrent infection, is perhaps the most frequent precipitating cause of gangrene. The latter is often heralded by blistering, reddening, or cyanosis of one or more toes, and there is persistent pain. The reddening may sometimes suggest cellulitis but palpation will reveal that there is no warmth in the affected part.

By examining the limb closely a very satisfactory evaluation of the state of its circulation can be made without the help of any special test or diagnostic equipment. Circulation in the legs is severely impaired if there is diffuse reddish cyanosis (rubor) of the feet in dependent position. It gives way to cadaveric pallor when the feet are elevated above the plane of the body. The degree of pulsation of the arteries (dorsalis pedis and tibialis posterior) and changes in temperature at the tips of the toes gives the most important indication of the adequacy of blood supply to the feet.

A number of special tests and procedures have been developed for the purpose of obtaining more accurate information about the state of circulation in the extremities. Of these the most important are: 1) Measurements of skin temperature before and after attempted vasodilatation by different means (reflex, drugs, anesthesia). 2) Oscillometric studies of the amplitude of pulsations. 3) Angiography. 4) Various skin tests in the affected limbs.[11,12]

THE DIGESTIVE ORGANS.

Many of the digestive disturbances of the aged are doubtlessly related to the effects of arteriosclerosis of the abdominal vessels, but the clinical symptoms and signs are illdefined and difficult to evaluate. Constipation, intestinal atony, achlorhydria and mild diabetes mellitus are probably among the disorders directly or indirectly connected with gradual impairment of the circulation. The most definite clinical expression of arteriosclerosis of the mesenteric arteries is, of course, mesenteric thrombosis. The sudden agonizing pains, tenderness with rigidity, prostration or shock, vomiting and the later passage of tarry stools constitute a definite clinical syndrome. At the early stages confusion may arise from its similarity with intestinal perforation.[1]

SUMMARY

An attempt has been made in this paper to touch upon the more common clinical manifestations of arteriosclerotic disease as we see them at the bedside. Some of the effects of this disease upon the heart, brain, kidneys, eyes, extremities, and digestive organs have briefly been discussed.

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A CASE OF AGENESIS OF A PORTION OF THE SMALL INTESTINE IN A NEWBORN

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Congenital malformations of different types are seen relatively often by obstetricians and pediatricians. Malformations of the digestive tract require more urgent diagnosis and treatment than other, more frequent, congenital abnormalities. It is the purpose of this report to direct attention to the possibility of congenital structural defects in the gastro-intestinal tract and stress their role in the differential diagnosis of vomiting and jaundice in the newborn.

CASE REPORT

Mrs. M. K., a 38 year old married white woman, was first seen in March, 1952. She gave January 21, 1952 as the first day of her last regular menstrual period. The date of expected delivery was calculated to be October 28, 1952. The woman had one living child 13 years old. She had two spontaneous abortions in the third month of pregnancy, one in 1940 and another one in 1941. A serologic test for lues was negative, and the woman was Rh. (D) positive. The prenatal course was uneventful until September 8, 1952, when the patient went into labor and after about one hour of good uterine contractions delivered spontaneously an apparently normal female baby. The infant weighed 5 pounds and 12½ ounces. By a strict interpretation of prematurity based on a birth weight of 5½ pounds or less the child was not premature. The labor itself must be classified as premature. At the mother's request, the baby was placed on the breast and fed at routine intervals.

The first day passed uneventfully. On the second day the baby had lost six ounces. The supervisors reported spitting up and incipient jaundice. It was hoped that the icterus would prove to be of the physiologic type. The baby was Rh (D) positive. The infant was taken off the breast and put on formula feeding. On the third day, the baby began to vomit in earnest. The vomitus was a light yellow color. On the fourth day, the baby vomited all feedings. The vomitus had a fecal odor and was a dark brown to green. The upper abdomen became distended with visible peristaltic waves. The nurses reported that only a small amount of meconium had passed per anum. The infant's weight had fallen to 5 pounds and 2 ounces. Dehydration was evident and it was obvious that the infant was critically ill. The consultant[1] considered atresia of the bowel, distal to the ampulla of Vater. A flat plate (Fig. 1) showed increased density of both lungs, more marked on the right than on the left side, incomplete expansion of the left lower lobe, and distension of one or two intestinal loops which occupied the entire abdominal cavity. These findings were interpreted[2] as incomplete aeration of the lungs due to pneumonia and intestinal obstruction. The clinical course was one of gradual deterioration. Cyanosis caused by pneumonia ensued and was combated by oxygen inhalation. On the seventh day, shortly before death, the baby weighed 4 pounds and 8 ounces.

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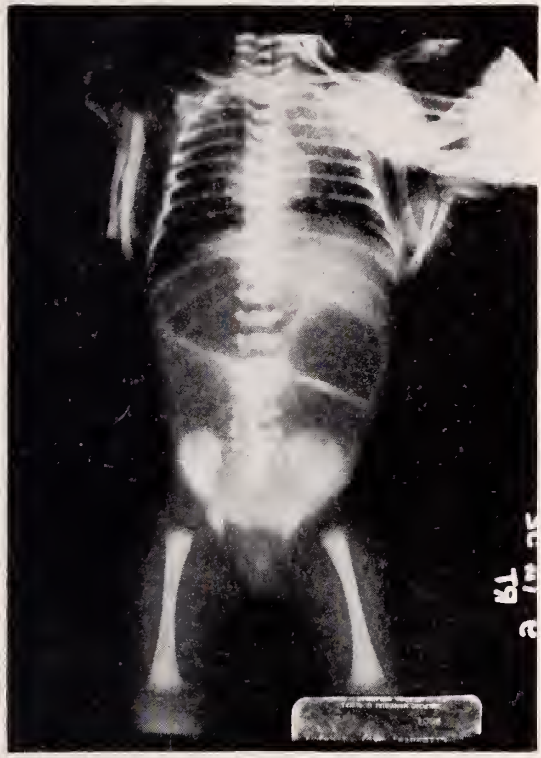

Fig. 1

An autopsy was performed[3] $2\frac{1}{2}$ hours after death. The pertinent findings were as follows: The body was that of a poorly nourished, markedly jaundiced white female infant. The diaphragm was high and the abdominal cavity was largely filled with a sausage-like intestinal loop which had a blind end. The lungs were indurated, without air, and sank in water. (On microscopic examination, the bronchi were filled with amorphous material, the alveoli contained segmented leukocytes, and the pulmonary tissue was heavily congested.) Circulatory organs, spleen, bone marrow, lymph nodes, thymus, the liver and biliary passages, pancreas, adrenals, urinary, and genital organs were normal in all respects. The esophagus was free and its lining was pale, livid. The stomach had a normal size and shape; its mucosa was pink to red and had normal rugae. The cardia and the plyorus were free. The duodenum was 22 cm. long (normally, it should be about 3 cm. long in a newborn) and its maximum diameter was 4 cm. (against a normal of about 1 cm.). The distal end of the duodenum was blind and its surface was smooth (Fig. 2). The duodenum was freely movable within the abdominal cavity. The anterior mesogastrium was absent. The duodenum was filled to capacity with deep-green colored mucoid material. The proximal end of the jejunum was blind. The length of the jejunum was 30 cm., that of the ileum was 45 cm., and that of the large bowel was 21 cm. All these parts of the intestine had a diameter of 6 mm. (All these measurements are normal for the newborn.) The mesentery

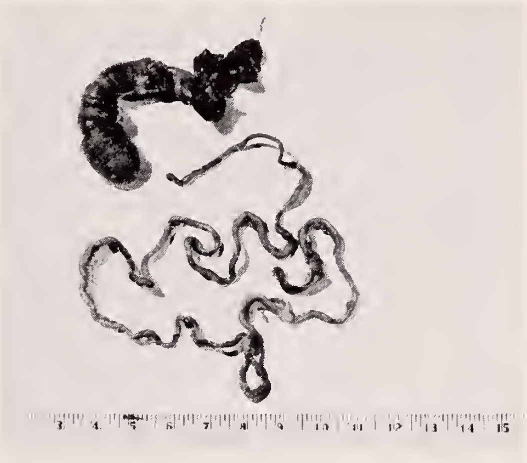

Fig. 2

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[1] John Baker, M. D., Attending pediatrician, Milford Memorial Hospital.

[2] Leslie M. Dobson, M. D., Radiologist, Milford Memorial Hospital.

[3] O. J. Pollak, M. D., Pathologist, Milford Memorial Hospital.

was normally developed, as were the omentum and peritoneum. The cause of death was aspiration pneumonia. The underlying conditions were malformation of the small intestine consisting of non-union of duodenum and jejunum with a blind distal end of the duodenum and blind proximal end of the jejunum, megaduodenum, and absence of the anterior mesogastrium.

Discussion

Malformations as described result from embryonic arrest during the second or third month of fetal life. Complete breaks in continuity of the bowel are rare, especially at the duodeno-jejunal junction. Mostly, the malformation consists of stenosis, and there is a stringy band present, connecting the two segments of the intestine. Atresia is less frequent. When stenosis, atresia, or agenesis is seated high, vomiting occurs early, and the projectile vomiting occurs regularly after feeding. Complete atresia is followed by distension of the proximal bowel with peristaltic waves, by dehydration, and dyspnea. In the encountered case, the obstruction could be placed distal to the ampulla of Vater because bile was vomited in large amounts. Jaundice was due to bile stasis.

Medical treatment of such patients is symptomatic. Surgical therapy alone can be successful. Certainly, one is not too optimistic in predicting that surgery, in the near future, will enable us to salvage infants with congenital agenesis, atresia, or stenosis of the bowel. Early diagnosis before appearance of the triad of dehydration, jaundice, and aspiration pneumonia is imperative. Farber, in 1933, pointed out that normal meconium contains cornified squamous epithelium cells as well as lanugo hairs from the fetal skin. These are swallowed by the fetus together with other contents of the amniotic sac. The absence of cornified squamous epithelial cells from the meconium is conclusive proof of complete obstruction of the intestinal tract. Examination of meconium is thus imperative whenever intestinal obstruction is suspected. Radiologic studies are also of great value in localization of the site of the obstruction.

Summary

A case of non-union at the duodeno-jejunal junction due to agenesis is presented.

The clinical course and symptoms are reviewed, the diagnostic attempts are described, and the autopsy findings are summarized.

Prompt clinical diagnosis and surgical intervention offer the only hope for patients with congenital intestinal obstruction.

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MEDICAL SOCIETY OF DELAWARE PROCEEDINGS: 1952

TUESDAY MORNING SESSION

The opening session of the One Hundred and Sixty-third annual meeting of the Medical Society of Delaware convened at 9:30 o'clock, Tuesday morning, September 9th, 1952, Dr. Ervin L. Stambaugh, of Lewes, President of the Society, presiding.

President Stambaugh: Gentlemen, the General Meeting of the One Hundred and Sixty-third Annual Session of the Medical Society of Delaware will come to order.

We will have the Invocation by the Rev. William D. Gibson, Pastor of the Presbyterian Church, Rehoboth Beach.

Dr. Gibson then made the invocation.

President Stambaugh: In introducing the next speaker, I would like to say that His Honor, the Mayor, and I came to Rehoboth about the same time. He went into the producing of milk; I went into the practice of drying it up. (Laughter) His Honor is not only a fine businessman, but he is a fine sportsman, as well. I would like to present to you, Hon. Robert D. Thompson, Mayor of Rehoboth Beach.

Mayor Thompson then addressed the Society.

The scientific meetings then proceeded exactly as printed in The Journal for August 1952, pages 227-230, covering Tuesday and Wednesday, September 9-10, 1952. All of the scheduled essayists and all but two of the discussors were on hand and made excellent presentations.

At the Wednesday morning session the Nominating Committee proposed the names of Dr. Millard F. Squires, Wilmington, and Dr. Ervin L. Stambaugh, Lewes, as nominees to be sent to the Governor of the State Board of Medical Examiners, in lieu of Drs. W. Edwin Bird and Joseph L. McDaniel, whose terms do not expire till 1954. The session adopted the report of the Committee.

At this same meeting the Kent County Society was not prepared to make a nomination for President-elect for 1952, not having held their caucus. This caucus was held on September 21, 1952, and their nominee was Dr. Hewitt W. Smith, of Harrington. Dr. Smith was elected by the Council, as per the motion of the Session, on November 12, 1952.

For comment on the 1952 meeting, with special reference to the elections, social events, and registration see The Journal for September, 1952, editorial on page 262.

The meeting was concluded Wednesday afternoon as follows:

President Stambaugh: At this time I want to thank everyone for being so tolerant to our mistakes. On behalf of the Society, I want to express appreciation to the officers, and Dr. Bird is to be singled out specifically for his untiring help.

The Ladies' Auxiliary has had a most successful year and the success of Mrs. Rennie's administration was read in her report to the House of Delegates. The essayists and discussors are to be thanked on behalf of the Society. All the essayists were here and all save two of the discussors. The exhibitors have expressed to me their satisfaction of this meeting and have been accorded an invitation to return. Mr. Seeger, the stenotypist, has been most patient, particularly with his overtime.

At this point we wish to express thanks to the Country Club for a most enjoyable meeting-place, and thank them for their delicious food. Ernest, the manager, and his staff, are thanked on behalf of the Society. Dr. William Marshall, Vice-President of the Club, who is here, I am sure will convey the thanks to the Directors.

I have been impressed by the fine attitude of the press this week. It is so easy for the press to over-expose us or put us out of focus. They have been a friendly press, and we shall continue this fine feeling.

Finally, the Sussex County Society, the host, is to be thanked and the Local Committee on Arrangements.

In conclusion, I want to wish the new President a most successful year. Thank you.

This, then, concludes the General Meeting of the Society.

The meeting adjourned at 4:35 p. m.

TRANSACTIONS: THE COUNCIL SEPTEMBER 8, 1952

Meeting of the Council of the Medical Society of Delaware convened at 7:45 o'clock, Monday evening, September 8, 1952, at the Rehoboth Beach Country Club, Rehoboth, Delaware, Ervin L. Stambaugh, M. D., President of the Society, presiding.

Those present were: Ervin L. Stambaugh, President; Andrew M. Gehret, Secretary; L. C. McGee, I. J. MacCollum, J. W. Lynch, L. L. Fitchett (vice A. C. Smoot, deceased).

President Stambaugh: This is a meeting of the Council of the One Hundred and Sixty-third Annual Session of the Medical Society of Delaware. In view of the vacancy created by the death of Dr. Aubrey C. Smoot, the Chair appoints Dr. L. L. Fitchett, of Sussex County Medical Society, to fill that vacancy.

Dr. Bird: Mr. President, the two things that the Council has before it prior to the Meeting of the House of Delegates are the Treasurer's Report for the previous year and the budget for the succeeding year. The Treasurer, not being on hand at the moment, I would suggest that we go on to some New Business that has cropped up throughout the year, and if the Council can dispose of these items auspiciously, which I think they can do—there are about 15 items, ordinarily, that would take at least an hour, but if you will bear with me, we will see how much of this business the Council can filter off and save from coming up later on in the House of Delegates.

Secretary Gehret: I might interpolate: Previously Treasurers had reported for a nine-months' period of the current year, and at no time was there a report on the last three months of that particular year, so that is the reason for this being the report for the year 1951, the calendar year '51 —so there would be a full 12 months.

Dr. Gehret then read the Treasurer's Report for the Year 1951 (see page —).

Dr. Gehret: That, Mr. Chairman, is the Treasurer's Report. And, incidentally, if you want, this is a copy of the Auditor's Report by Haggerty and Haggerty, of Wilmington, certified public accountants.

They give some recommendations here. (Reading the third recommendation) Actually, the first and second recommendations were trivial ones—the one was tracing a check; the other one was as to an item of $27.00 Social Security taxes on one of the employees.

At December 1951 the operating cash balance of the General Fund was in amount $9,613.24 and they say: "In our opinion this sum is in excess of current needs and we suggest that consideration be given to investing a part thereof in government bonds or other income-producing securities." Can we act on this, or recommend it to the House of Delegates?

Dr. Bird: The Council should make a definite recommendation and have that presented to the House of Delegates.

Dr. McGee: I recommend we invest part of the sum of $9,613.24 at the discretion of the Treasurer.

The motion was seconded.

President Stambaugh: It is regularly moved and seconded that we invest a portion of the cash balance of the $9,613.24 in excess, according to the auditors, of what we should have in our cash balance beyond current needs.

The motion was put to a vote and carried.

Dr. Bird: Recommendation No. 4 refers to the fiscal year, but you have just covered that in the motion.

Dr. Gehret: Yes. It is something I had mentioned; and the Treasurer had taken it up with me, that instead of having it for the present three-quarters of a year, that the report be made for a full calendar year, even if it is almost a year late, because, otherwise, there was never a report given on that last two-and-a-half or three months of the year. So this is the report for the full calendar year of 1951. Next year it will be for the full year 1952.

President Stambaugh: That has been carried through, then. We need not consider it any longer.

Dr. McGee: Do you need authorization from the Council?

Dr. Bird: I think it would be wise.

Dr. Gehret: That would make it legal.

Dr. McGee: Then I move that the Treasurer's Report be that of the preceding calendar year.

The motion was seconded and carried.

Dr. Gehret: Other than that, Haggerty and Haggerty gives us a clean bill of health.

Dr. McGee: I move a vote of thanks to the Treasurer for a well-worked-out report. That takes time and trouble.

Motion carried by acclamation.

President Stambaugh: The proposed Budget for 1953 is next.

Dr. Gehret then read the Report of the Budget Committee for 1953 (see page —).

Dr. Bird: Before you vote on that, I may suggest that certain of these items of receipts have been put at the low level and certain items of disbursements have been put at the high level, and since I have been in this job for four and a half years, and learned a few things, my own personal estimate is that the receipts will exceed disbursements by at least $200.00. In other words, there should be a surplus of $200 or more instead of the budget being exactly balanced.

President Stambaugh: Gentlemen, you have heard the Report of the Budget Committee. What is your wish?

Dr. Fitchett: I move it be accepted.

Dr. Gehret: Again, do we recommend this to the House?

Dr. Bird: I think it would be best to state that the Council recommends the budget be approved as presented.

Dr. Fitchett: So moved.

Motion was seconded.

President Stambaugh: Then it is moved and seconded that the Report of the Budget Committee for '53 be approved as read.

The motion was put to a vote and carried.

Dr. Bird: Now, as to the rest of the reports, I think we should hear the reports unless the subject matter is not of sufficient interest. It is possible for any member to move the report be read by title.

President Stambaugh: I have a communication here that I didn't answer fully. The letter is from Mrs. Wolf, the Executive Secretary of the Delaware Committee on Children and Youth, Wilmington. (The letter was read by the Chairman) I replied to the letter and told her it wouldn't be possible to get the Medical Society's reaction before September 8th and that I would present this letter officially, at that time. She again wrote me as follows. (Reading the second letter)

Dr. McGee: I would suggest it be turned over to our Public Relations, then, and ask for further information as to what they have reference to.

President Stambaugh: Then the letter will be turned over to the Committee on Medical Service and Public Relations. Is that a motion?

Dr. McGee: I so move.

Seconded, put to a vote and carried.

Dr. Bird: Now comes twelve or thirteen items that I think the Council can dispose of.

You have heard a lot of discussion about H. R. 6391, and the other about pensions for professional people, with tax deductions during their earning period. The A. M. A. has approved it. I think, instead of reading this whole thing. . . . .

Dr. McGee: Most of the fellows have heard about it.

Dr. Bird: I think it would be well for this Society to also go officially on record as approving the passage of the Keogh-Reed Bill.

Dr. McGee: Am I correct in effect that this is an attempt to modify an unfortunate error in our patchwork income tax situation and to have some plan of security?

Dr. Bird: As to the doctor and the entrepreneur, who has none. That is right.

Dr. McGee: In other words, he has no way to deduct for the requirement.

Dr. Bird: That is right.

Dr. McGee: If I am correct it is a logical move. I am for the Bill.

Dr. Bird: That is a perfect summary of it. Dr. McGee. So, the motion would be that this Council approve the A. M. A. stand on that.

Dr. I. J. MacCollum: I will so move.

Dr. McGee: I second it.

President Stambaugh: It has been regularly moved and seconded the Council go on record as approving the A. M. A. stand on the Keogh-Reed Bill.

The motion was put to a vote and carried.

Dr. Bird: The next item is a letter from Dr. Howard concerning the American Board of Microbiology. You will read that, Mr. Secretary?

(Dr. Gehret read the letter re: American Board of Micro-biology)

Dr. Gehret: This was addressed to Dr. Fitchett, dated May 2, 1952. It has been signed by all the Pathologists in the State. What is the gist of that?

Dr. Fitchett: The gist is outlined in the letter. There is a group apparently seeking Board approval—lab. fellows— that are not M. D.'s and these M. D.'s are opposing and it is also opposed by 10 or 11 different groups throughout the country. It is my recollection that no action was taken upon the resolutions that were presented by the A. M. A. because the A. M. A. in its Board approval limits its approval to M. D.'s anyway, so that this resolution it seems to me would hardly call for any action.

Dr. Gehret: It is superfluous, then.

Dr. Bird: I believe we should approve their sentiments on the matter. But let me get this: The A. M. A. approved this?

Dr. Fitchett: I think it was referred to some scientific section.

Dr. Bird: I believe the Section on Pathology.

Dr. Fitchett: No action was taken, however, by the House of Delegates, because no action was necessary to approve something non-medical. Their approval on the Board is based on the fact that members are M. D.'s. If they are not, they can't get approval.

Dr. Bird: In other words, this non-M. D. set-up is not going to get approval of the A. M. A.?

Dr. Fitchett: That is right.

Dr. Bird: Then there is no need to act on it unless there is a motion to lay it on the table.

Dr. MacCollum: I move the matter be tabled.

The motion was seconded; put to a vote and carried.

Chairman Stambaugh: What is next?

Dr. Bird: There is a question here about Blood Banks that I hoped Dr. Howard would be present to discuss—relating to the fact that the A. M. A. recommends setting up of a community blood bank. What we have in Delaware is a group of hospital blood banks. The question is whether this Society should or should not approve the setting up of a committee on blood banks.

Dr. McGee: I move that be referred to the Pathologists of our State.

The motion was seconded and carried.

Dr. Bird: The National Society for Medical Research. This is primarily the Society that makes the fight for experimentation on animals in opposition to the terrific and unscientific fight put up by the anti-vivisectionists. The letter is signed by Prof. A. J. Carlson, whom we all know. I put him down as one of the great scholars of America. Will you read that letter?

(The letter referred to was read by Dr. Gehret)

Dr. McGee: Would our budget tolerate a $25 or $50 contribution?

Dr. Bird: $25.00, easily.

Dr. McGee: I move we apply for membership and instruct our Treasurer to send a $25.00 contribution.

President Stambaugh: It is moved we join the National Society for Medical Research and commit ourselves to $25.00 a year contribution beginning in 1953.

Dr. Fitchett: I will second it.

The motion was then put to a vote and carried.

Dr. Bird: Now comes the question of the World Medical Association. Dr. Bauer is Secretary and Treasurer of the United States Committee for that. He happens to be the present President of the A. M. A. They have set up a quota for each state and put down the quota for Delaware as ten. Delaware has two members. The dues are $10 a year, per person, that is. I merely mention this to urge you to join if you have not joined and to invite other members to join. I don't think this calls for action on the part of this Council. This is just for your information.

Dr. Bird: Next comes the Medical Legislative Service. It is edited by Dr. Marjorie Shearon. The subscription to her service is $12.50 a year. I find it is a valuable thing and have quoted from it repeatedly. I would like another copy in the State besides the one in the Executive Office. I think the place to send it would be to the Chairman of the Public Laws Committee.

Dr. MacCollum: I think that is the proper one to send it to, if you are going to send it to anyone.

Dr. McGee: I move we subscribe to it and have it addressed to the Chairman of the Public Laws Committee.

The motion was seconded; put to a vote and carried.

Dr. Bird: This Society has never set up a Committee for Chronic Illness. I wonder if this Council thinks it advisable for the House of Delegates to set up such a committee? They have one in several states. It is my feeling that the committees we have on the care of rural, industrial, colored, tuberculosis, cancer, etc., are sufficient. Does this Council think it advisable to ask the House of Delegates to set up a Committee on Chronic Illness? It is a matter for you to take up.

Dr. Fitchett: I move it be tabled.

The motion was seconded, and carried.

Dr. Bird: I have here the new By-Laws of the New Castle County Medical Society. All of the By-Laws of the three counties, of course, had to be brought in line with the new By-Laws of the State Society, adopted in December, 1949. New Castle has set up their new By-Laws which are in full accord with all of the provisions of the national state By-Laws. I would recommend that this Society approve the new By-Laws of the New Castle County Medical Society. They have to be approved by the Council.

Dr. McGee: They have never been approved?

Dr. Bird: No, they are just in effect last year.

Dr. MacCollum: I move they be accepted.

President Stambaugh: It is moved and seconded.

The motion was carried.

Dr. Bird: Now I have here the required copies of the new By-Laws of the Sussex County Medical Society. Except for the mere changing of a few words for clarification, not changing, at all the intent of the By-Laws, I find that they comply with the state and national By-Laws. And so, I recommend that they, also, be approved by this Council.

President Stambaugh: We have spent a good deal of time on them. Our By-Laws were in an antequated state.

Dr. Bird: For one thing they were admitting doctors as soon as they came to Sussex. The doctor has to be in the county one year. And Kent does the same thing. The chairman of the Kent By-Laws Committee is going to get busy and Kent is going to wind it up. But certain things you must do. And Sussex has at last put it down in writing.

President Stambaugh: Do I hear a motion, then, that we accept the new By-Laws of Sussex County?

Dr. McGee: I so move, Mr. Chairman.

The motion was seconded and carried.

Dr. Bird: That winds up the New Business that I have. I have nothing further for the meeting of Council.

President Stambaugh: That brings us to the end, then, I think.

Dr. Gehret: Mr. President, I would like to ask the Council if they will approve of something to be presented to the House of Delegates.

There has been informal discussion about a medical college in Delaware. Not to start that subject now, but to increase the excellence of residency training and the various residency programs, I, personally, think it would be good to have some anatomical teaching in the various hospitals.

I have here a copy of the Pennsylvania State Anatomical Act, and I would like to ask the Council if they would approve the Committee on Public Laws presenting this to the State Legislature for passage. Not necessarily this particular one, of course, but a similar anatomical act.

In talking to Dr. McGee we find that the emphasis will be increasingly on resident training and it would be a lot more attractive if there were more complete training.

What is your pleasure?

Dr. Bird: Your suggestion is what?

Dr. Gehret: That we have a State Anatomical Act.

Dr. Bird: Why not move that it be referred to the Committee on Public Laws for study and possible action?

Dr. McGee: May we here approve it in principle, and present it to the House of Delegates and turn it over to the Committee on Public Laws? I so move.

President Stambaugh: You have heard the motion.

The motion was seconded and carried.

President Stambaugh: The Chair believes that is all, then, for the Council.

Dr. Bird: It would be wise to recess for five minutes after adjournment and see if we can round up some more delegates and start the meeting of the House of Delegates.

President Stambaugh: Do I hear a motion that we adjourn?

Dr. MacCollum: I move we adjourn for ten minutes.

Dr. McGee: I will second the motion.

President Stambaugh: Then we will adjourn the meeting of the Council and recess for ten minutes and come back for the meeting of the House of Delegates.

The meeting of the Council thereupon adjourned at 9:20 p. m.

TRANSACTIONS: HOUSE OF DELEGATES
SEPTEMBER 8, 1952

The Meeting of the House of Delegates convened at 9:30 p. m. o'clock, Monday, September 8, 1952, Dr. Ervin L. Stambaugh, President of the Medical Society of Delaware, presiding.

President Stambaugh: The Meeting of the House of Delegates of the 163rd Session of the Medical Society of Delaware will please come to order.

We will have the roll call at this time.

Roll Call: E. L. Stambaugh, V. D. Washburn, A. M. Gehret, N. L. Cannon, H. H. Stroud, J. R. Beck, S. W. Rennie, Harry Taylor, H. W. Smith, J. S. McDaniel, Sr., L. M. Dobson, L. L. Fitchett, R. L. Klingel, Catherine C. Gray, I. J. MacCollum, L. C. McGee, H. T. McGuire, J. W. Lynch, C. T. Lawrence, C. L. Hudiburg, G. W. K. Forrest, E. R. Mayerberg, F. F. Hudson.

Dr. Bird: The quorum is 15, so we are constituted to proceed.

President Stambaugh: Mr. Secretary, may we have the reading of the Minutes of the last session of the House of Delegates?

Secretary Gehret: Mr. Chairman, the Minutes of the last session of the House of Delegates were printed in full in the December issue of the State Journal. I would request that you accept that as the reading of the Minutes.

President Stambaugh: Do they need approval?

Dr. Rennie: I move they be approved as printed.

The motion was seconded and carried.

President Stambaugh: Reports of the Officers.

Report of the President

The President has no lengthy or comprehensive report. The usual visitations to the constituent societies were made and all seemed to be harmonious and everyone was tolerant of everybody else. I deemed it my duty as President of the Society to consider its problems almost every day and my responsibility for the program, or for the actions of the Society, are not mine, alone. The other officers, and particularly Dr. Bird, did their very best. I may be a bit boastful, perhaps, but I think this is one of the best programs that we have had.

In concluding this report I urge every member, as far as the opportunity avails, to be present at the meetings tomorrow and Wednesday. That is all I have.

President Stambaugh: Report of the Secretary.

Secretary Gehret: No further report, Mr. President.

President Stambaugh: Report of the Treasurer. Will you read that report, Dr. Gehret?

Report of the Treasurer

Secretary Gehret: Yes, Mr. Chairman. Incidentally, this report which I am going to read has been approved by Haggerty and Haggerty, who are our Certified Public Accountants, in Wilmington. There were several suggestions made by them, which were accepted by the Council. If you wish me to read the whole thing, I shall do so I will state that it was accepted by the Council and as of December 31st, 1951 there was a balance of $9,613.24. I await your approval, or, if you want the whole thing read. . . .

Treasurer's Report

General Fund

Receipts

Cash on hand at beginning of year		$ 7,910.66
Dues for members		7,512.50
AMA Assessments		7,410.00
Annual Session		
Exhibit space rental	1,180.00	
Dinner subscriptions	1,170.00	2,350.00
Other Income		124.10
Collection of Dues		105.00
Employees' Withholding		1,044.00
Total Receipts		$26,456.26

Disbursements

Salaries		
Executive secretary	$3,000.00	
Stenographer	486.31	
Payroll taxes — society's share	54.00	$ 3,540.31
Operations		
AMA	$7,410.00	
Subs. Journal	895.50	
Auditor	175.00	
Meals	64.65	
Ins. and Bonding	25.00	
Employees' withholding	1,040.10	
Operations Misc.		
Safety Dep. Box Flowers, etc.	73.31	9,683.56
Office		
Printing & Stat.	$ 100.20	
Exec. Secretary's Expense	147.02	
Conv. & Tr. Sh. Mag.	10.00	
Sharon Med. Leg. Serv.	12.50	
Conf. of Presidents	10.00	279.72
Annual session		
Food and entertainment	$1,804.15	
Rental of hall	598.55	
Stenotypist	271.25	
Program and tickets	186.50	
Projector service	60.00	
Badges	52.64	$ 2,973.39
Travel		
Delegates—A.M.A.	$ 200.00	
Conferences—A.M.A.	166.04	366.04
Total Disbursements		$16,843.02

ASSETS

General Fund		
Cash in bank:		
Regular account	$9,613.24	
Defense fund	4,165.15	$13,778.39
Investments:		
Stocks	$2,800.00	
Government bonds	2,100.00	4,900.00
		$18,678.39

Respectfully submitted,
Jos. M. Messick, *Treasurer*

Secretary Gehret: In previous years the Treasurer's Report was made for the first nine months of the year and presented to the House of Delegates and never at any time had a report been made on the last three months, so Haggerty and Haggerty made the suggestion, which was accepted by the Council, that the Treasurer's Report be made for the calendar year preceding the State Meeting.

One thing more which the accounting firm has suggested: the cash balance which was $9,613.24 was quite a large balance and they wondered whether it wouldn't be smart to put some of it in securities of some kind. Earlier this evening the Council went on record as approving the recommendation and presenting it for your final approval—a statement that the Treasurer be empowered to invest a certain amount or a certain sum or a certain portion of that $9,000, leaving him enough working capital. The recommendation made by the Council did not specify any particular securities or the amount.

Dr. Washburn: How much was suggested?

Secretary Gehret: It was left to the discretion of the Treasurer, so that he would have sufficient working capital on hand.

Dr. Rennie: I make a motion that the Treasurer be given a free hand to invest a certain portion that he deems fit, of the $9,600, leaving him sufficient working capital for the coming year.

Dr. Cannon: How about making it subject to approval by the Council; where it is going to be invested, and so on?

Secretary Gehret: The Council made the recommendation, not recommending, however, any security.

President Stambaugh: The Chair suggests approval of the Council's actions, so far as approving the Treasurer's Report is concerned, which includes this recommendation that the cash balance be brought down to a smaller sum.

Dr. Stroud: I would like to ask why we as a State Society would like to keep a cash balance on hand. Why wouldn't we use that to help nurses' education or physicians' education, or something like that, rather than to invest it?

Dr. Washburn: Is there a motion before the House? I am rising to a point of order.

President Stambaugh: There is. Does anybody second that motion?

The motion was seconded.

President Stambaugh: It has been regularly moved and seconded the Treasurer be empowered to invest funds of the State Society, beyond his working capital necessary for the year, in good securities.

Dr. Washburn: I shall vote against that motion for two reasons: First, this asks too much; that is to say, it places too much responsibility upon a Treasurer, and is an unwise provision for a Society to place such responsibility in the hands of one person. In pension funds and other places where I have had some responsibility, it has always been customary to see that whoever it was that was to be held responsible for investing the money, it was provided that the investment be made upon the advice of competent persons—be they the Presidents of two or three of the savings funds, or some such provision of protecting both the Treasurer and the Society. It is very easy to lose nine thousand dollars, so I shall vote against it.

Dr. Rennie: Could I modify my original motion, that the Treasurer be vested with the power of investing certain sums from the Treasury with the aid of competent advice, such as the President or the Secretary or the Treasurer of the Bank in which that money is now held in trust? What bank do we have this money in?

Dr. Bird: The Equitable Trust.

Dr. Rennie: All right, I will state that in the motion: with the aid of the Equitable Trust.

Dr. Stroud: I still don't see why the Society wants to keep money. We are screaming for nurses throughout the State. Why not use that toward nurses' education, or something of the sort? I see no reason why not.

Dr. Rennie: I feel the sums involved at the present time are not that great, that we can just say we will make up a fund to invest in, well, say, the Nurses' Fund. As it gets along, maybe, in the following year or so, then I think a fund like that should be set up, but at the present time I think there should be some reserve, of which we have none, at the present time.

President Stambaugh: Do I hear a question on the motion as amended? (Question called for) All in favor of the motion as read by the Secretary?

A show of hands was called for.

Secretary Gehret: (Counting) There are 9 for the motion; 6 against.

President Stambaugh: The motion is carried.

Secretary Gehret: Are there any physicians here who are not delegates or alternates? Are there any physicians who have not answered to the Roll Call? (Discussion while reviewing those present) I am asking now for physicians who are not delegates or alternates.

Dr. Bird: I have these names: Drs. Hudiburg, Forrest, Tarumianz, Mayerberg, McDaniel, Sr., Hudson.

President Stambaugh: May the Chair have a motion that the men named be seated as members of the House of Delegates in lieu of those not here?

Dr. Washburn: I will so move.

The motion was seconded and carried.

Chairman Stambaugh: Next, the Report of the Executive Secretary.

Report of the Executive Secretary

Your Executive Secretary reports that the volume of work for the year just passed shows a moderate increase over the previous year. The correspondence and other work is on a current basis.

We made an official visit to the Sussex Society and to the Kent Society in March. Both of these meetings were very enjoyable and we hope we imparted some information of value. We have attended numerous committee meetings and conferences in the state.

In addition, we attended the Middle Atlantic States Conferences in Philadelphia in November and in May; the National Federation of State Boards in Chicago in February; the Blue Cross-Blue Shield Medical Directors Conference in San Francisco in March; and the Medical Society Executives Conference in Chicago in June.

The membership of the Society is as follows:

	New Castle	Kent	Sussex	Total
October, 1951	260	25	42	327
Additions				
New Members	12	3	8	24
Reinstates	1	0	0	
	273	28	50	351
Losses:				
Deaths	1	0	2	18
Transfers	11	4	0	
September, 1952	261	24	48	333

A gain of 7 as compared with a gain of 23 last year and of 13 the year before. The state board this year has issued 42 new licences as against 28 last year.

Our exhibits this year are the same number but yield a slight increase in income over the Rehoboth Meeting in 1948. The gross this year is $640.00.

Three of the four amendments discussed at last year's session were approved, but there remains as unfinished, the fourth amendment which provides for the abolishment of dues for men who have retired from practice.

We have assisted in preparing a program for this Session which we hope you will like. It is well-balanced, and the essayists are all men who rank high in their respective subjects.

In conclusion we wish to thank all of the officers and members of the Society and of the Auxiliary with whom we have had official business during the year. Their cooperation has been splendid and we gratefully acknowledge it.

Respectfully submitted,
W. Edwin Bird, *Executive Secretary*

President Stambaugh: The Chair recommends Dr. Bird for that splendid report. Do I hear approval?

It was regularly moved and seconded the report be approved; put to a vote and carried.

We will now have the Reports of the Standing Committees. The Committee on Scientific Work.

Dr. Bird: Dr. Gehret is too bashful to state that he thinks the program is good.

President Stambaugh: The Chair asks for approval of the Report of the Committee.

Approval moved and carried.

Next, the Committee on Medical Education.

Secretary Gehret: I have here Dr. Shands' report.

Report of The Committee on Medical Education

The Committee has had no meetings during the past year. I have been in contact with Doctor Carl J. Rees, Dean of the Graduate School of the University of Delaware, concerning a program for post-graduate education for the physicians of the state. I have talked with Doctor Rees on many occasions concerning this. I have been of the opinion for some time that the University of Delaware ought to have some type of educational program for the physicians of Delaware. Doctor Rees agrees with me but we have not been able to work out any type of program to date which might fit within the present pattern of the policies of the University of Delaware. It may be that during the coming year, some satisfactory program can be worked out.

This is the only activity of the committee during the last year which I have to report.

Respectfully submitted,
A. R. Shands, *Chairman*

It was moved and carried that the report be accepted.

President Stambaugh: Report of the Committee on Publication.

Report of Committee on Publication

As heretofore, we transmit the report of the Committee in two parts: (1) that of the Editor; and (2) that of the Managing Editor.

Report of the Editor

We are nearing the end of Volume 24 of the New Series. The amount of material published is about equal to that of Volume 20, which was the largest in the history of The Journal. Through the excellent cooperation of the hospitals and of other contributors, together with the papers from our Annual Session, we generally have a small surplus of material on hand—a healthy condition which we hope will continue. The scientific value of the material contributed by our own profession in Delaware is definitely improving — another healthy condition which we hope will continue.

Our printers, The Star Publishing Company, again deserve a most kind word for their continued courtesies and efficiency, and to their entire staff must go again our thanks.

To all our officers and members, whose continued cooperation sustains us, we offer our grateful thanks once more.

Respectfully submitted,
W. Edwin Bird, *Editor*

Report of The Managing Editor

August 1, 1951 to August 1, 1952

A. Checking Account

Checking Account, Wilmington Trust Co., August 1, 1951		$2,018.22
Receipts		
Advertisements	$8,274.77	
Bonus on Ads AMA	448.40	
Subscriptions		
Medical Society Members	846.00	
Others	117.00	
Single Copy Sales	44.55	
Halftones	50.02	
Book Sale (150th Annual Meeting)	3.00	
Interest on War Bonds (These Bonds in the amount of $3,502.38 were purchased Dec 10, 1942)	87.50	
Total Receipts		$9,871.24
Disbursements		
Printing and Mailing Journal	$7,135.71	
Editor's Salary	2,400.00	
Stenographer's Salary	480.00	
Stationery and Supplies	6.00	
Notary Fees	1.00	
Postage	14.94	
Telephone and Telegraph	2.40	
Bound Volumes	20.25	
Copyrighting Journal	48.00	
Bonding Stenographer and Managing Editor	32.50	
Reprints	15.25	
Social Security on Editor's Salary	27.00	
Total Disbursements		$10,213.05
Deficit		—311.81
Balance in Checking Account, August 1, 1952		$ 1,676.11

B. Savings Account

Savings Account, Wilmington Trust Co., August 1, 1951	$1,634.27	
Interest on Savings Account	15.00	
Balance in Savings Account, Wilmington Trust Co., August, 1952	1,649.27	
Savings Account, Wilmington Savings Fund Society, August, 1951	3,066.96	
Interest on Savings Account	76.65	
Balance in Savings Accounts, August 1, 1952		$ 4,792.88

C. War Bonds

U. S. War Bonds, Purchased December 10, 1942	$ 3.502.38
U. S. War Bonds, Balance, August 1, 1952	$ 3,502.38

Summary

Checking Account Balance, August 1, 1952	$ 1,676.41
Savings Accounts Balance, August 1, 1952	4,792.88
U. S. War Bonds	3,502.38
Grand Total (Accounts A, B, C)	$ 9.971.67

Respectfully submitted,
M. A. Tarumianz, *Business Manager*

Does the Chair hear approval of Dr. Bird's report as Editor and that of Dr. Tarumianz as Managing Editor?

Dr. MacCollum: Isn't it customary the financial reports should be audited before the day they are approved? I am just asking for information.

Dr. Tarumianz: They are audited once a year.

Dr. Bird: According to the State By-Laws they are to be audited at the end of the year by a Certified Public Accountant. That has been done, since the new By-Laws of 1949, by Haggerty and Haggerty.

Dr. Hudiburg: I make a motion the reports be accepted with thanks to both of the officers.

Seconded and carried.

President Stambaugh: Now, the Committee on Public Laws.

Report of Committee on Public Laws

Dr. McDaniel: Owing to the fact there was no meeting of the Legislature during the period 1951-52 we have no report to make, Mr. President.

President Stambaugh: Thanks, anyway, for your good work in the past, Dr. McDaniel. Do we have approval of Dr. McDaniel's report?

Dr. Rennie's motion for approval was seconded and carried.

President Stambaugh: Committee on Budget.

Secretary Gehret: This is the Budget as drawn up by Dr. Messick and his Committee, for the calendar year 1953.

Report of The Budget Committee For 1953

	Proposed Budget for 1953	
Receipts		
Dues	$8,000.00	
Exhibits	1,200.00	
Dinner Subscriptions	1,200.00	
Refunds	75.00	
Dividends	105.00	
Interest	95.00	
Total Receipts		$10,675.00
Disbursements		
Salaries		
Executive Secretary	$3,600.00	
Stenographer	500.00	
Taxes, Social Security	54.00	
Total		$ 4,154.00
Operations		
Journal Subs. at $3.00	$ 925.00	
Committee on Pub. Laws	350.00	
Com. Med. Serv. & Pub. Rel.	175.00	
Grievance Board	50.00	
AMEF Committee	50.00	

Other Committees	96.20	
Auditor	175.00	
Ins. and Bonding	25.00	
Safety Deposit Box	4.80	
Total		$ 1,851.00
Office		
Printing, Stat. Sup. & Post.	$ 400.00	
T. & T.	25.00	
Office Mag.	25.00	
Exec. Sec's. Expense	150.00	
Total		$ 600.00
Travel		
A.M.E. Deleg. and Conf.	$ 400.00	
Meals	350.00	
Total		$ 750.00
Annual Session		
Rental of hall, etc.	$ 600.00	
Programs and tickets	250.00	
Badges	50.00	
Projection Service	70.00	
Stenotypist	350.00	
Meals and Entertainment	2,000.00	
Total		$ 3,320.00
Total Disbursements		$10,675.00

Respectfully submitted,
Joseph M. Messick, *Chairman*

Dr. Gehret: Usually it has been found in the past that the receipts are somewhat higher than was anticipated and the disbursements are slightly lower than were anticipated, but the budget as drawn up shows total receipts of $10,675.00 and the disbursements $10,675.00.

Dr. Washburn: Receipts $10,675 and the disbursements $10,675? The same figure?

Dr. Bird: I expect a surplus of at least $200; it may be nearer $500. I think we may be able to increase the charge for exhibits the next year. In checking over exhibits in other State Societies, while we are a small society and can't get the fees we should get, I think we are a little under. I think we can get at least $5.00 more per exhibitor space and there are thirty exhibitors.

Dr. Washburn: I move we accept the report of the Budget Committee as submitted. (Seconded)

Secretary Gehret: Pardon me, but so there will be no saying later "I didn't understand," earlier this evening the Council approved the raise in salary for the Executive Secretary from $3,000 to $3,600, the first increase in 5½ years. That is included in here.

President Stambaugh: It has been regularly moved and seconded the Report of the Budget Committee for 1953 be accepted as submitted.

The motion was then carried unanimously.

Report of The Woman's Auxiliary

The Woman's Auxiliary to the Medical Society of Delaware has completed its 23rd year, with an increase in membership, and at the same time an increase in interest and activity. We have emphasized the desirability of members working with other established community groups and have had gratifying results.

We have been actively associated with the Women's Group of the Delaware Civil Defense Organization, with the Red Cross, and as individual members, in work with Parent-Teachers Associations, school boards, A.A.U.W., and hospital social work.

Auxiliary members have donated over 1,250 hours of work to the Red Cross Bloodmobile, in addition to other Red Cross work. One county auxiliary sponsored a Blood Donor Day, when members took their husbands and families and friends to the Blood Bank. It was publicized in the newspapers as the Medical Auxiliary Day, with pictures of some of the doctors and their wives donating their pints of blood.

Auxiliary members manned booths and acted as guides during part of the three days of the "Alert America" exhibit held in Wilmington last fall.

Two donations of $100.00 each have been made to the American Medical Education Fund.

A $50.00 donation was made to the Red Cross Emergency Flood Relief Fund.

Two station wagons full of clothing, toys, and athletic equipment was taken to the Governor Bacon Health Center.

A $50.00 Christmas donation was made to Governor Bacon Health Center for children who had no family to send Christmas presents to them.

Six Hundred Dollars was used this year for nurses scholarships. It was voted to give two scholarships this year instead of the usual one we have given previously. Four nurses who could not enter training without financial help were placed, through us, with scholarships from other organizations.

The Honorable John J. Williams, Senator from Delaware, addressed an open meeting of one county auxiliary to which members of the City Federation of Women's Clubs of Wilmington were invited.

Kent County members have devoted many hours to the making and keeping up of hospital supplies, also the county nurses call on Auxiliary members to make cancer dressings as they are needed.

Sussex County members have given many hours to their hospital work, plus much time in Red Cross, Church work, P. T. A., and school boards.

New Castle County members have continued the work started many years ago of sewing for the Visiting Nurses Association, making layettes, nurses aprons, and various articles as needed.

Copies of the revised constitution and by-laws have been mailed to each member, and a State Auxiliary Newsletter was sent to each member in April.

One of our members, Mrs. Richard Durham, was moderator on a doctor's radio and television program which was presented once a week for several weeks with different doctors of the state each week.

Our legislative chairman has kept us informed through her reviews of the literature from Washington. She has been engaged with urging the members to register for voting this fall.

This year has given us a feeling of closer relationship between the counties, and our work among other community groups is giving us a feeling of civic responsibility which we would like to develop still further.

May I take this opportunity to thank the officers of the Medical Society and the Advisory Board for their advice and assistance which was ever ready when needed.

Respectfully submitted,
Margaret C. Rennie, *President*

President Stambaugh: This report needs our commendation as well as our approval. It is surely a pleasure to work along with some one as interested as Mrs. Rennie. Do we have a motion for approval of this report?

Motion to approve the report with thanks and commendation, was carried.

Dr. Hudiburg: I make a motion the Secretary be instructed to write a letter to the President of the Auxiliary expressing our appreciation for the work that has been done.

Seconded and carried.

President Stambaugh: Now, the Special Committes. Advisory Committe, Woman's Auxiliary.

Report of Advisory Committee, Woman's Auxiliary

The Advisory Committee of the Woman's Auxiliary to the Medical Society of Delaware has had no occasion to meet this year.

Several minor matters have been discussed with the President, Mrs. Rennie, but no problems sufficient to discuss with the whole Committee have been encountered.

Respectfully submitted,
Roger Murray, *Chairman*

Motion to approve the report was carried.

President Stambaugh: Committee on Cancer.

Report of The Committee On Cancer

September, 1952

Cancer control in Delaware progresses along several integrated paths. A more widespread concern about cancer as a personal problem is manifested by the increase in attendance at the cancer detection centers operated throughout the state by the Delaware Division of the American Cancer Society and the Cancer Control Division of the State Board of Health. Several hospitals maintain cancer clinics with associated special diagnostic and treatment facilities.

The incidence of cancer is well documented by the State Board of Health to which the disease is reportable by law. The reported incidence of 828 cases in 1951, compared to 788 in 1950 and 689 in 1949, probably reflects greater accuracy in recognizing the disease.

Lay education is a prominent function of the Delaware Division and professional education is advanced through the detection centers and by the distribution of a cancer bulletin by the State Board of Health.

Care of the chronically ill cancer patient still remains a difficult problem. The Governor Bacon Health Center affords institutional care for a limited number and the Delaware Division aids needy patients by supplying dressings, appliances, transportation, and assistance in meeting hospital bills not covered by the Levy Court.

Research in cancer at the University of Delaware is facilitated by awards from national organizations.

Respectfully submitted,
Douglas M. Gay, *Chairman*

The report was accepted by title.

President Stambaugh: Next, the Committee on Tuberculosis.

Report of Committee On Tuberculosis

The Committee on Tuberculosis submits the following report for the past year. Some of the statistics are based upon the fiscal year of the State Board of Health, July 1, 1951 to June 30, 1952, while others are for the calendar year 1951.

Tuberculosis Mortality — Delaware

(January 1, 1951 to December 31, 1951)

The tuberculosis mortality rate for the twelve months stated was 18.6 per 100,000 population. There were 60 resident deaths as compared with 71 deaths during the previous year. The population of Delaware used was 323,243. The reduction in 1951 was 3.4 deaths per 100,000 population, comparing favorably with the U. S. figures. The death rate for the white population was 10.8 while the rate for non-white was 66.6. Greater emphasis should be given to the problem in the non-white population.

Brandywine and Edgewood Sanatoriums

Brandywine reports 127 admissions during the fiscal year and 133 discharges. Edgewood reports 72 admissions and 54 discharges. As of August 18th this year—no waiting list was reported for either institution.

I think I should mention that Dr. E. Willis Hainlen, the new medical director for Brandywine and Edgewood reported for duty on July 16th. Mr. P. J. Peden, the new administrator for the two institutions joined the staff on June 16th. Dr. Nathaniel Young, the new staff physician arrived for duty on April 14th.

State Board of Health

The mobile chest X-ray unit, which is a cooperative project of the State Board of Health and the Delaware Anti-Tuberculosis Society, X-rayed 24,833 Delawareans during the calendar year. Active and undetermined cases numbered 70.

More than 3,500 attended the periodical chest clinics held in the County Health Centers. In addition to fluoroscopies, 1,701 large X-rays were taken. These figures were for the State Board of Health's fiscal year. Tuberculin Tests were numbered more than 600.

Delaware Anti Tuberculosis Society

The Society continued to lend its assistance to the over-all state program. With the Wilmington Visiting Nurse Association cooperating, 699 bedside nursing visits were made on 48 patients. In cooperation with the Rehabilitation Division 22 persons were rehabilitated. There were 33 patients trained or in training. Other high spots of the Society's activities included:

Total X-rays taken in Diagnostic Clinics	2,747
New cases diagnosed	63
Follow-up X-rays of old patients	293
New Cases of Tuberculosis	63
Active	23
Apparently arrested	13
Apparently cured	11
Quiescent	3
Status undetermined	13

7,359 Hospital routine X-rays at Delaware and Memorial Hospitals.

54 Schools enrolled in Health Habit Course.

7,305 Students enrolled in Health Habit Course.

Culture Media equipment installed at Brandywine.

Handicraft display case supplied to Brandywine.

Scientific medical test books provided the Delaware Academy of Medicine.

The total number of new cases of tuberculosis diagnosed during the year from all case-finding methods numbered 273.

Anyone wishing a more detailed report on the above activities may obtain them from the Delaware Anti-Tuberculosis Society.

Respectfully submitted,
Gerald A. Beatty, *Chairman*

The report was accepted by title.

President Stambaugh: Committee on Social Hygiene.

Report of Social Hygiene Committee

There has been a steady decline in the number of cases of syphilis receiving treatment. This became apparent after penicillin therapy, and has persisted during the past year. Early infectious syphilis is uncommon, except during the season when migratory labor is prevalent in the state. Pregnant women with latent syphilis, referred by prenatal clinics, form a good proportion of the latent cases.

New cases of gonorrhea continue to be as prevalent as ever at the treatment centers, and some of the cases are showing a resistance to antibiotic therapy.

Illustrative figures taken from the rapid treatment center at Eighth and Adams Streets at Wilmington for the twelve months from July, 1951 to 1952 are as follows:

88 new acute gonorrhea admissions

5 primary or secondary syphilis admissions

Total case load 348

Three or more rapid treatment centers for venereal disease control are maintained in each of the three counties in the state. There is increased use of additional diagnostic aids, such as spinal fluid examinations and fluroscopic chest examinations, in latent cases when possible.

The committee feels that venereal disease control is well organized and active throughout the state. It wishes to emphasize the value of prenatal diagnosis and treatment, and the increasing use of diagnostic aids in detecting the ravages of late syphilis.

Respectfully submitted,
Allen D. King, *Chairman*

The report was accepted by title.

President Stambaugh: The Report of the Committee on Maternal and Infant Mortality.

Report of Committee On Maternal and Infant Mortality

A consideration of the various factors influencing maternal and infant mortality in the State of Delaware might be better understood if the overall figures are first stated.

There were a total of 8,203 births in the state for 1951. These are subdivided as follows: In New Castle County 5,097 white or 74.8% of the total and 787 non-white or 56.6%; in Kent County 545 white or 8.0% and 159 non-white or 11.5%; in Sussex County 1,171 white or 17.2% and 444 non-white or 31.9%. In New Castle County 4,653 of the white or 99.4% were delivered in hospitals and 99.6% were attended by physicians; 698 non-whites or 94.8% and 96% respectively; in Kent County 612 of the white or 92.3% were delivered in hospitals and 93.9% attended by physicians; 110 non-whites or 46.6% and 52.9% respectively; in Sussex County 880 white or 88.8% were delivered in hospitals and 98.3% attended by physicians; 146 non-whites or 36.6% and 50.4% respectively.

The premature birth rate which markedly affects infant mortality is as follows: In New Castle County the total number of whites was 287 for a rate of 61.3, and non-white 106 with a rate of 144.0. In Kent County the number of whites was 42 or a rate of 63.3 and non-whites 30, with a rate of 127.0. In Sussex County the number of whites was .62 for a rate of 62.6 and non-whites 43, with a rate of 107.7.

The number of illegitimate births by counties is as follows: In New Castle County 82 whites or a rate of 17.5, and 197 non-white or a rate of 267.6 In Kent County 27 whites or a rate of 40.7, and 86 non-whites or a rate of 364.7. In Sussex County 18 whites or a rate of 18.1, and 137 non-whites or a rate of 343.3.

By counties the percentage of pre-natal blood tests is as follows: In New Castle County 99.1% of whites were tested and 96.7% of non-whites. In Kent County 94.5% of whites and 86% of non-whites; and in Sussex County 91.2% of whites and 82.2% of non-whites respectively. Though the overall percentage is higher there is room for improvement, especially in the non-white groups.

The number of still-births were as follows: In New Castle County 61 whites or a rate of 13.0 and 18 non-white or 24.5%; in Kent County 12 whites or 18.1% and 5 non-white or 21.2%; and in Sussex County 26 whites or 26.3% and 18 non-white or 45.1%, with a total for the state of 106 white or a rate of 15.6% and 43 non-white or 30.8%. The average rate for the entire state is 18.2%.

The total infant mortality up to one year for Delaware in 1951 was 153 white or a rate of 22.4 and 68 non-white or a rate of 48.8%, with an average of 26.9%. This compares with a natural average for 1949 of 31.3%. In New Castle County the total number of deaths of whites was 99 or a rate of 21.1% and 33 non-white or a rate of 44.8%. In Kent County the total number of whites was 18 or a rate of 27.1% and non-whites 11 or a rate of 46.6%. In Sussex County the total number of whites was 24 or a rate of 24.2 and 23 non-whites or a rate of 57.6%.

Of the total of 221 infants who died before the age of one year 80 died the first 24 hours of life; 62 within one week; 12 under one month; and 67 before the first year.

An analysis of the causes of infant mortality—49 were diagnosed as immature, 19 as post-natal asphyxia and atelectasis without immaturity, 10 as lobar pneumonia, 6 as intracranial and spinal injury at birth, 21 having various types of congenital malformations including the heart, gastro-intestinal and renal systems, and the remainder from a variety of causes. From these figures it would indicate that the prevention of premature birth and the salvaging of these infants when born, would cause a very marked lowering of infant mortality.

A comparison of the neonatal rate, or the deaths under one month of age illustrates the hazard to the newborn in the first thirty days of life. In New Castle County there were 79 white infant deaths or a rate of 16.8% and 18 non-white or a rate of 24.6%. In Kent County there were 10 white infant deaths or a rate of 15.0% and 9 non-white or a rate of 38.1%. In Sussex County there were 15 white infant deaths or a rate of 15.1% and 13 non-white or a rate of 32.5%. The total for the State was 113 white or a rate of 16.5% and 41 non-white or a rate of 29.4%. The deaths in later infancy from one month to one year was 40 white or a rate of 5.8% and 27 non-white or a rate of 19.3%.

The Maternal mortality is as follows: In New Castle County there were 3 white deaths with a rate of 0.6% and no non-white. In Kent County there were no white or non-white deaths. In Sussex County there was 1 white death with a rate of 1.0%, and one non-white with a rate of 2.5%. The average mortality for the state was 0.6% which compares with the 1949 average maternal mortality rate of 0.9%.

The causes of maternal mortality were post-partum hemorrhage, fever of unknown origin during puerperium, abortion without toxemia, abortion with toxemia, and two with eclampsia.

From the foregoing, it is in the realm of prevention of prematurity that the greatest advances must come to decrease the present relatively high neonatal death rate. It is possible that a more widespread supervision of the older infant would be a positive factor in prevention and early detection of the infections that cause death in this period.

Respecfully submitted,
A. H. Williams, Laurel
J. L. Fox, Seaford
J. B. Baker, Milford
B. F. Burton, Dover
Ira Burns, Wilmington
C. L. Hudiburg, Wilmington
R. O. Y. Warren, Wilmington

Note: The Committee gratefully acknowledges the valued assistance of Mr. Cecil Marshall, Statistician of the State Board of Health, who provided the essential data for the above report.

The report was approved by title.

President Stambaugh: The Committee on Mental Health.

Report of Committee on Mental Health

The Committee on Mental Health wishes to report to the Society that in its opinion there is a great deal of duplication and delay of the care and treatment pertaining the mentally ill, the feebleminded, the senile and the epileptic patients.

For the purpose of consolidating all the intramural and extra-mural facilities for the care and treatment, training, etc. of the above mentioned group of patients, the Society should urge the Governor and Legislature to consider the consolidation of all intra-mural and extra-mural facilities of the mental health program under one State Board of Mental Health incorporating the Delaware State Hospital at Farnhurst, the Governor Bacon Health Center at Delaware City, the Delaware State Welfare Home at Smyrna and the Delaware Colony at Stockley. The above Board should be composed of 15 members, five from each county, two of whom should be physicians in good standing in the same county and interested in mental health problems. The Board should appoint a well-qualified psychiatrist who should be a diplomate of the American Board of Neurology and Psychiatry and who should have at least five years of administrative experience in a large mental institution. Such a Commissioner would have the power to appoint heads of each division who will be qualified in the field of work assigned to them. At no time should there be more than eight members of the above Board belonging to the same political faith.

Respectfully submitted,
G. W. K. Forrest, *Chairman*

Motion to adopt was carried.

President Stambaugh: Report of the Special Committee of the Medical Society of Delaware on "Feeblemindedness in Delaware."

Report of the Committee on Feeblemindedness

Dr. Tarumianz: This is a voluminous report of some 57 pages, the result of one year's hard work. The Committee would appreciate it if the House of Delegates would listen for a half hour to the highlights of this report.

Dr. Tarumianz reviewed the report.

Dr. MacCollum: (During the reading of the report) I move so much as read be considered the reading of the complete report of the Committee on Feeblemindedness and that the report be accepted.

Dr. Tarumianz: I think after spending a year of hard work in the preparation of this report that we should listen to the reading of a few essential facts. I will be finished in another ten minutes.

President Stambaugh: The Chair recognizes this, and I think we have allotted enough time, so we can give him about thirty minutes and still finish around 11 or 11:15.

(Dr. Tarumianz continued the review to the end of the report.)

Dr. Rennie: I think the Committee should be commended highly for its report and I move it be accepted and approved by the House of Delegates, and a copy of the same should be sent to the Governor, the State Board of Education, the City Board of Education, and the Commission of the Delaware Colony at Stockley.

Dr. Mayerberg: I would like to amend that motion, that the Committee that drew up this report and took so much effort to develop it be given a vote of thanks by this House of Delegates. It is one of the finest and most comprehensive efforts I have ever heard. It is not a report just for now; this is a far-reaching program which might probably take 45 or 50 years before it is put fully into effect, but if the Medical Society will carry it on—not just put it in its files and let it die there—we ought to keep working on this thing for years to come. I move the Committee be given a vote of thanks.

President Stambaugh: Amendment to Dr. Rennie's motion was that we give Dr. Tarumianz a vote of thanks. Would that every Committee worked as hard as has this Special Committee. The motion was seconded, and a rising vote of thanks was given.

Dr. Tarumianz: Thank you, very much.

Dr. Rennie: I also recommend the following resolution be sent to the Governor:

Resolved: That the House of Delegates of the Medical Society of Delaware recommends to the Governor of the State and the Legislature to provide the necessary funds to the State Department of Public Instruction in conjunction with all State Auxiliary Departments, to study the problem of extramural care of all mentally defective children and adults.

Also Be It Resolved: That the House of Delegates of the Medical Society of Delaware recommends to Governor and the Legislature to provide necessary funds to the Commission of the Delaware Colony for studying and planning the future needs of the Colony on a scientific basis. The future plans should be on a 25 year basis. The Commission should employ a qualified architect, an engineer and have the advice of specialists in the field of intramural care, treatment and training of mentally defective children and adults. Such a report should be prepared and submitted to the Governor and the Legislature as soon as possible, thus eliminating any unnecessary capital expenditures of state funds, before such a plan is worked out.

President Stambaugh: You have heard Dr. Rennie's motion that we accept the report of the Special Committee of the Medical Society on Feeblemindedness and that copies of same be sent to the Governor, the State Board of Education, the City Board of Education, the Commission of the Delaware Colony at Stockley, and you have heard the Resolution. Do I hear a second to that motion?

The motion was seconded.

Dr. Tarumianz: As a matter of explanatory note, may I say that the reason I begged to have this resolution passed is because I know when such a lengthy report goes to the Governor or to the State Legislature usually they just cannot find time to read all of the report, while the resolution certainly embraces all that is necessary. I am very grateful to you that you passed this resolution.

President Stambaugh: Next, the Committee on Heart Disease.

Report of Committee on Heart Disease

The Committee met by telephone on August 19, 1952, and begs to report the progress of cardiovascular diseases in the State of Delaware during the past year. Activities have been promoted largely through the Delaware Heart Association, an affiliate of the American Heart Association.

Speakers concerning this have been sent to various Service Clubs. A series of television programs has been projected titled "Know Your Heart." Various members of the medical society have participated in this project. A new angiocardiographic unit has been installed in the Delaware Hospital in conjunction with the Delaware Heart Association to aid in the diagnosis of congenital heart disease as well as to help study other vascular defects such as aneurysms and also possible candidates for mitral commisuratomy.

Under the Public Health Service is the State Board and Local Board of Health. Physical examinations have been conducted routinely on school children, Where heart disease has been discovered, these children have been referred to their family physicians.

The Committee proposes that joint cooperation through a joint committee be evolved by which the State Board of Health, as well as the individual cities' boards of health, particularly the City of Wilmington, the American Heart Assn., the Delaware Academy of Medicine, Delaware State and County Medical Society all work jointly for the following projects:

1. To educate the lay public in better knowledge and care of heart disease.
2. To inform the public, particularly indigent patients, of clinics where treatment and study of heart disease can be received.
3. Case study, particularly in reference to the incident of rheumatic fever in the State of Delaware.
4. Other projects such as hypertension, coronary thrombosis, etc.
5. Cooperation with the Governor Bacon Health Center as an institution where heart cases can be referred and studied.

In conclusion, it is our feeling that this disease which claims a toll of 1 out of every 3 persons, should receive more intelligent and cooperative attention by the medical profession through the various societies as mentioned above.

Respectfully submitted,
Edgar R. Miller, *Chairman*

Secretary Gehret: Mr. Chairman, the Committee on Heart Disease might also be accepted by title.

The report was accepted by title.

President Stambaugh: Gentlemen, it is not that these committee reports are not important; it is merely now a question of time, and if there is anything controversial, we will have to stop and read it.

Next is the Committee on Diabetes.

Report of Committee on Diabetes

Following the meeting of the State Society in the fall of 1951, material was sent to all physicians in the state calling attention to Diabetes Week, which occurred last year in November, and especially pointing out the importance of detection of early cases and the most practical method of detecting such cases. Emphasis was particularly placed on obtaining not fasting urines and blood sugars but post prandial urines and/or blood sugars.

Diabetes Week this year, conducted in cooperation with the American Diabetes Association, will be November 16 to 22. The Committee will meet shortly to outline measures to be taken this year.

Respectfully submitted,
Lewis B. Flinn, *Chairman*

The report was accepted by title.

President Stambaugh: Next is the Committee on Medical Service and Public Relations.

Report of Committee on Medical Service and Public Relations

Your committee drew up a plan of action for this year, having to do largely with encouraging our members to take an active part in local affairs and to urge them to take interest in the coming national election.

The plan is as follows:

(1) To urge all members and their families to register and vote and they in turn try to interest their friends and patients to do the same; regardless of political affiliation.

(2) Urge leaders of both major parties to elect delegates to their respective conventions who are opposed to socialism and socialized medicine. This should be done on the local level.

(3) Urge all members to join civic, social and church organizations and to participate actively in their projects.

(4) Urge members to join the Delaware Chamber of Commerce or at least their local Chambers of Commerce. To show appreciation for what the National Chamber of Commerce is doing for us.

(5) Urge each County Society to set up a plan for taking care of emergency work, holidays and Sundays. The doctor to make sure if away or not available for any reason, that the patients are adequately covered.

(6) Urge each County Society to set up a Grievance Committee to handle all cases in their respective counties. If they are unable to properly dispose of the complaints, refer to the State Grievance Board.

We now urge our members to be sure to register and vote on November 4th. There is still time to register on October 18th. That is the last day so watch your local papers for the time and place. It is not necessary to talk politics to your friends, neighbors and patients, and you will not be doing so, if you simply ask them to register and vote.

The times are so serious that the end result of the election should be the voice of the American people and not that of a small segment of the population. Let the people speak and then abide by their decision. It is a lamentable fact that only 51 percent of the doctors of the country voted in the last general election—we should do better this year.

Your committee has asked the Hospitals of the state to declare Election Day a holiday, with suspension of all clinics and with the operating schedule to be for emergency cases only. We made the request so that the doctors, nurses and hospital personnel would take time to go to the polls and exercise their privilege and duty to vote.

We have just received a letter from Miss Fannie Nathans, Secretary of the Association of Delaware Hospitals.

"All of the general hospitals in the State, with the exception of the Nanticoke Memorial Hospital, have replied to the memorandum concerning the observance of Election Day as a holiday.

"These hospitals have informed me either verbally or in writing that arrangements will be made for doctors, nurses and other hospital personnel to have time to vote on Election Day.

"The concensus seem to be that it is not altogether feasible to declare Election Day a holiday nor is it entirely necessary if sufficient time is given to hospital personnel to vote.

"If I can obtain additional information for you on this particular matter, I hope that you will feel free to write to me."

It is interesting to note that the Republican platform states "we are opposed to federal compulsory health insurance with its crushing cost, wasteful inefficiency, bureaucratic dead weight and debased standards of medical care."

The Democratic party health plank dodged the issue or compulsory health insurance. It was so carefully worded in many respects that there could be a wide divergence of opinion when it comes to actual interpretation. It might be worse.

Statement on Health Insurance by General Dwight D. Eisenhower: "I am not going to answer too specifically, because what could be in a bill labeled compulsory health insurance? I am not so certain, but I can tell you this: I am quite certain over the years that I was at Columbia, no one spoke out more than I did against the centralization power in Washington, against bureaucratic government and submitting our lives toward a control that would lead inevitably to socialism. . . I do believe that every American has a right to decent medical care."

In discussing Federal aid to medical education, General Eisenhower said that in private universities we must "support medical education by private means, because if we didn't it would be the first step toward the socialization of medicine, and I am against socialization."

Statement on Health Insurance by Governor Adlai Stevenson of Illinois: "I am against the socialization of the practice of medicine as much as I would be against the socialization of my own profession, the law. . . If the insurance principle could be brought to bear on these catastrophic illnesses, it would largely eliminate the specter of terror from the average home. . . I am sure that . . . the common objective can be largely realized without the destruction of professional independence.

"Basically, the problem is how to lift people over the costs of major illness. I don't know whether voluntary plans can do the job. I think the new commission on medical needs may well add some light and remove some heat, enabling us to find a satisfactory solution to this perplexing problem."

Your committee feels that there has been considerable improvement in taking care of emergency cases, and that our members are covering their work when away on vacation and on their days off. There is still room for improvement. But it can be worked out satisfactorily on the local level.

Respectfully submitted,
E. R. Mayerberg, *Chairman*

The report was accepted by vote of the House.

President Stambaugh: Committee on Military and Veterans Affairs.

Report of Military and Veterans Affairs Committee

The Military and Veterans Affairs Committee of the Medical Society of Delaware has had no occasion to meet this year. A revised contract setting forth fee schedules has been approved this year but as the revision was approved by the whole Committee last year, no meeting was necessary.

Respectfully submitted,
Roger Murray, *Chairman*

The report was accepted by title.

Report of the Committee on National Emergency Medical Service

The committee held no stated meetings during the year. However, the chairman was in touch with the individual members, several of them being active on a local level. Two members of this committee resigned key posts during the year. Dr. Washburn resigned as Health Commissioner of Wilmington on March 15, 1952 and Dr. Munson resigned as chairman of the Disaster Committee of the Red Cross.

The A. M. A. sent out several questionnaires and much valuable literature. A request from the association for recommendations for applicants for regional medical directors for Civilian Defense could not be met, because the qualifications were so high, that those who could qualify were not interested and those who were interested could not qualify.

The need for this committee is not very great in a state the size of Delaware now that the local hospitals have representatives on a central committee for Civilian Defense.

It is felt that each hospital should hold at least one staff meeting a year on Civilian Defense at which time a topic like "Germ Warfare" or "Protection From Atomic Attack," could be discussed.

Respectfully submitted,
Joseph R. Beck, *Chairman*

The report was accepted by title.

Report of Committee on Rural Medical Service

Your committee wishes to give not only a report of the present available medical service in Delaware, but to encourage physicians to take the leadership in the formation of community heath councils in order to overcome our unmet needs.

Every community knows its own problems and in finding a solution for them the local physician may be of invaluable service. We wish to suggest that the health committees of the various organizations in a community consider local health problems jointly. The health committee of farm, church, school, men's and women's service clubs, etc., would render their community a real service by organizing into a Health Council and considering their problems together.

Rural Health means much more than medical care alone. It includes education regarding dietary habits, immunization against preventable disease, sanitation, first aid, and methods of attracting doctors, dentists, and hospital facilities to a community.

Delaware residents may well be proud of its existing facilities for maintaining health. New Castle County, with a population of 218,879, has as of May 31, 1952—261 physicians; Kent County with a population of 37,870, has 24 physicians; and Sussex County with a population of 61,336, has 50 physicians; or a total of 335 physicians to a population of 318,085.

Dental care, while concentrated in certain areas, is considered adequate.

Medical facilities are available through our State Board of Health, in the divisions of maternal and child health, tuberculosis control, preventable disease control, cancer, laboratory, oral hygiene, sanitation, nursing, crippled children, heart, venereal disease, and nutrition. Cooperation with all local health units, the Water Pollution Commission, and the operation of the Brandywine and Edgewood Sanitoriums.

Our mental health is guarded by our Mental Hygiene Clinics throughout the State and proper treatment is afforded in the Delaware State Hospital.

The Governor Bacon Health Center gives care and treatment to certain maladjusted or mentally ill children between the ages of 4 and 16, crippled children, children awaiting assignment to foster homes, alcoholics, epileptics without psychosis, and certain bedridden aged persons; also, an emergency hospital unit is maintained.

The State Welfare Home is available to our indigent and chronically ill, and the Delaware Colony for the care of the feeble-minded.

There are four general hospitals in Wilmington, also one in Dover, Milford, Lewes, and Seaford. In addition, there are several private hospitals, the Veterans Hospital, and the Alfred I. duPont Institute for crippled children.

Information and aid is available throughout the State from our various societies on cancer, tuberculosis, diabetes, heart, and arthritis, the facilities of Vocational Rehabilitation, Curative Workshop, Blue Cross and Blue Shield, and physical examinations in most of our schools.

Fluoridation of public water supplies has been provided for in a few towns.

Nurses are needed in all sections. Additional physicians are needed in order that proper medical care may be given through all rural areas, and at the same time allow our older physicians to attend clinics and postgraduate courses in order that they may maintain contact with the newer precepts of medical practice.

In addition to the above, State and private agencies are reaching into every part of the State to give assistance to the blind, the aged, the poor, aid to dependent children, aid to disabled, recreational camps have been established, and ambulance service is available. Our school system is extensive where children may learn basic principles of health.

Summarizing, with all of the above services at hand each locality through a Community Health Council might benefit and have a solution for most of their health problems.

We must accept our full public responsibility for all health needs and continue to improve our present facilities.

Respectfully submitted,
Clarence J. Prickett, *Chairman*

The report was accepted by title.

Report of Committee on Industrial Health

Your committee supplied the Council on Industrial Health, American Medical Association, with data on the Delaware Workmen's Compensation Law and the opinion of our group on the physician's role in better administration of such laws; and with a review of the anticipated health and medical care needs occasioned by expansion of the Dover Air Base.

Dr. G. H. Gehrmann represented the Committee at the 12th Annual Congress on Industrial Health held in Pittsburgh January 18-19, 1952.

Your attention is called to the statement "Essentials of Medical-Nursing Services in Industry" which was issued jointly by the American Association of Industrial Nurses, the Industrial Medical Association, and the Council on Industrial Health of the American Medical Association, and which appeared in the Journal of the American Medical Association June 7, 1952 (vol. 149, p. 597). Your committee requests endorsement of this statement by the Society.

We solicit the attention and personal interest of all members of the Medical Society of Delaware in problems of industrial health.

(1) Industrial medicine is a specialized and rapidly growing field of practice.

(2) Intelligent industry, both labor and management, seek a high type of medical care and guidance for its personnel.

(3) Organized medicine as a whole prospers, directly and indirectly, from the practice of good industrial medicine.

(4) Industrialization has brought all of the problems and issues of industrial health to our state.

(5) Much educational work remains to be done.

Respectfully submitted,
Lemuel C. McGee, *Chairman*

The report was accepted by title.

Report of the Advisory Committee of the Delaware Curative Workshop

Following is a report on the Advisory Committee of the Delaware Curative Workshop. The meeting was held at the time of the Delaware State Medical Society Meeting in Wilmington, Delaware, and subsequent reports have been made through personal contact over the telephone.

Since then by contact with the members, other decisions have been made. It was decided for the Delaware Curative Workshop to form a Medical Advisory Committee which could be called in, in case of emergency, in order to give patients full protection. This is functioning on a voluntary basis, of course, and gives the Workshop a sense of security in dealing with the public.

Respectfully submitted,
Irvine M. Flinn, Jr., *Chairman*

The report was accepted by title.

Report of State Board for Vocational Education, Vocational Rehabilitation Division

The Rehabilitation Division of the State Board for Vocational Education has again set a record in rehabilitating into employment more handicapped persons than in any other year.

For the fiscal year ending June 30, 1952, there were 440 persons with handicaps placed or returned to gainful employment, thus becoming useful, self-supporting citizens.

From the period 1939 until June 30, 1952, a grand total of 3,342 persons with disabilities have been satisfactorily rehabilitated. The major services rendered in most cases were vocational training, physical restoration, and placement. More than 900 persons are on the active caseload at the present time, an average of 140 for each professional Counselor.

On the basis of the number of rehabilitations per 100,000 population, Delaware for the fifth consecutive year ranked first in the 51 States and Territories operating a rehabilitation program.

The United States Office of Vocational Rehabilitation disclosed that, during the fiscal year 1951, Delaware rehabilitated 144 persons per 100,000 population (an increase of 3 over the previous year), West Virginia was second with 90, while Michigan ranked third with 89. Our State rehabilitated more than three times the National average, the latter for fiscal 1951 being 43 rehabilitations per 100,000 population. Delaware also continued to lead in the number of disabled persons served and in the number of such persons in the active caseload per population.

The National average of cases served per 100,000 population was 151, while Delaware had 439; the National average of persons in the active caseload was 91, Delaware having 237. It is significant to note that National and Delaware statistics remain almost stable from year to year, with only slight increases shown.

The majority of cases referred to the Rehabilitation Division are unemployed at the time of referral. Of the 440 cases rehabilitated this past year, 85% were unemployed. The average wage BEFORE rehabilitation was $4.38 per week; AFTER rehabilitation services were provided, the weekly earnings increased to $41.91. Without considering wage increases, the earnings of these rehabilitated cases would amount to $958,900.00 in one year only.

Since such a large percentage of referred cases are unemployed, support by other members of the family or through friends is necessary. Many of these people and their families are dependent upon State Welfare aid. Of the 440 rehabilitants, 69 were being assisted by public welfare agencies. These 69 persons also had 120 other members of the family dependent on them, so that 189 persons were in reality receiving State aid. These were drawing $45,760.00 a year relief benefits. After various rehabilitation services were provided, the 69 cases were restored to employment. The cost to the Division was $201.50 per case, and their total earnings in one year only would amount to $133,186.00. From direct dependents on relief and drawing $45,760.00 a year benefits, their status had changed to that of wage earners in the amount of $133,186.00 a year.

A variety of services is available to our handicapped Delaware citizens and these are briefly as follows: diagnosis, including medical and specialty examinations, X-rays; vocational guidance; medical and surgical treatment, including hospitalization, surgery, therapy; prosthetic appliances, such as braces, hearing aids, artificial arms or legs; vocational training, in school, employment, correspondence, or tutorial; maintenance and transportation while in training or under treatment; tools and equipment during training or for placement; occupational licenses to carry on a trade; and selective palcement.

We in Rehabilitation greatly appreciate the cooperation given us by doctors and specialists throughout the State. This cooperation and interest is reflected in the large number of successful physical restoration cases which have been returned to employment and self-sufficiency.

John G. King, *Director*
Martin B. Pennington,
Medical Administrative Consultant

Report of Committee on Health and Sanitation

To the Officers and Fellows of the Medical Society of Delaware:

Your committee on Health and Sanitation has held no meetings. However, a majority of the members of the committee are or have, in the recent past, served as members or employes of state or municipal boards of health.

It may be said that in the field of public health and sanitation administration, the past year has been one of turbulence, bickering and contention.

Public health education by means of indignation meetings and letters to the public press is an inefficient, protracted and unpleasant process.

The State Board of Health cannot possibly administer efficiently or effectively a public health program in Delaware without an increase in available funds.

This is particularly true in rural New Castle County, where a single health officer, with a small staff of graduate nurses, is responsible for the administration of a public health program in an area which includes many so called real estate "developments," a major drainage problem and a population in excess of 100,000.

Public health administration in Wilmington can never be effective or efficient until legislation is enacted which will insure that the department of health is in truth an autonomous body, clothed with authority, in its own right, to administer a sanitary code which includes power and authority to compel landlords to install sanitary plumbing within the dwellings under their control.

In addition, the laws should be repealed which empower the Mayor and Council to appoint the City Physicians, and the City Council to appoint the City Milk Inspector.

Since the collection of garbage is not a proper function of a department of health, this activity should be transferred to some other agency or department.

The enactment of remedial legislation by the general assembly of Delaware will require initiative, leadership and wise counsel.

These considerations present a challenge to organized medicine in Delaware.

Let it not be said that the Medical Society of Delaware, as such, and its members in particular, are oblivious of this call to active duty in the cause of sound public health administration in all areas of our little state.

Respectfully submitted,
Victor D. Washburn, *Chairman*

The report was accepted by title.

Dr. Washburn: I move the acceptance of the report as presented and that the Legislative Committee of this Society be instructed to cooperate with the Legislative Committees of the component societies to the end that we lend our support and our influence toward the enactment or the attainment of the objectives described in the report.

Dr. Mayerberg: I will second the motion.

Motion was carried.

Report of Committee on Fees For Welfare Patients

The State Department of Public Welfare wishes to develop a satisfactory program which will give adequate medical care to recipients of Old Age Assistance, Aid to Dependent Children, Public Assistance, and Aid to Disabled, which programs are under their administration.

The Committee on Indigent Care of the Council on Medical Services of the American Medical Association suggests that an Indigent Medical Care Plan should:

1. Provide all services normally available locally to other citizens.
2. Provide the same services for all indigent groups.
3. Utilize existing facilities as much as possible.
4. Offer free choice of physician in home and office care.
5. Develop and use free outpatient clinics only when medically desirable and mutually agreeable to the medical profession and the administrative agency involved. Participation should be open to all physicians qualified to serve in the particular types of clinics.
6. Provide for medical supervision of all medical aspects.
7. Provide reasonable payment to physicians on a basis agreed to by the medical society.
    a. Fee for service for home and office care
    b. Hourly payments in free clinics
    c. In-hospital medical and surgical on a predetermined fee schedule
8. Provide for centralized local administration of medical program for all groups.
9. Provide for continuous liaison between medical society and adminstering agency.
10. Diagnostic services
    Preventive medical services
    Rehabilitation
11. Other

An agreement has been worked out between the State Department of Public Welfare and the State Pharmaceutical Association whereby the State Department of Public Welfare will pay for all drugs and supplies used in their program.

Eligibility for participation is determined by the State Department of Public Welfare according to established formulas. The need for medical care, duration of such need, and the type of care necessary to meet that need is primarily the province of the physician.

Believing that in most cases coming under this program, the physician would not receive proper remuneration in money for his services, your Committee offers the following motion:

"That, when necesary, indigents should apply to the proper division of the State Department of Public Welfare, which division in turn will authorize the expediture for treatment. Emergencies are to be handled without question. Follow-up information to be obtained through the County offices of the State Department of Public Welfare. That the need for care, duration of such need, and the type of care necessary to meet that need be decided by the physician. Free choice of physician on a fee for service basis, and that the fees for the medical care of the recipients of assistance from the State Department of Public Welfare of whatever division be paid by the State Department of Public Welfare directly to the attending physician at the rate of 80% of the usual fee charged in similar cases."

Mr. President, I move the adoption of this motion.

Respectfully submitted,
C. J. Prickett, *Chairman*

The report was accepted by title.

President Stambaugh: Next is the Report of the Committee on Hospital-Physician Relationships.

Report of the Committee on Hospital-Physician Relationships

During the past year no problems have been brought to the attention of this Committee, such as a controversy between physician and physician, or physician and hospital management.

May we call your attention to the fact, however, that this newly entitled Committee does exist. The House of Delegates of the American Medical Association at a meeting in December, 1951, recommended a clarifying statement entitled, "Guides for Conduct of Physicians in Relationship with Institutions." It was published in the Journal of the A.M.A. December 22, 1951, vol. 147 pp. 1684 and 1685. In any given controversy it recommended that every effort should be made to settle the matter at the staff-management level. In case of failure at this level, assistance of the County Medical Society should be requested. If, then, it cannot be resolved it should be submitted to a committee of the State Medical Association for advice and recommendation. Failure at this point would then lead to investigation by the Judicial Council of the A.M.A. for recommendation of action to be taken.

Your committee hopes that no serious controversies will arise, but if they do they ought to be resolved by the procedures now available as above stated.

Respectfully submitted,
C. E. Wagner, *Chairman*

The report was accepted by vote of the House.

President Stambaugh: Grievance Board.

Dr. Bird: I have no report here.

Dr. Forrest: I sent word by telephone through Dr. Bird, or his Secretary, that we had no report and no meeting.

President Stambaugh: That is a wonderful report.

Dr. Mayerberg: I would be interested to know whether no meeting meant no complaints. Of course, if there were no complaints, there would be no need of meeting, but, have there been any complaints?

Dr. Forrest: I don't know. I vaguely remember Dr. Stambaugh sending me a letter from a person in Wilmington of a case I thought had been closed a year or so before, relative to a fractured arm. The Board I believe considered it last year, to the best of my knowledge.

President Stambaugh: The Chair remembers sending Dr. Forrest that report, and I am sure it was well taken care of because I heard nothing more about it.

President Stambaugh: Thank you. If there is no objection, then, the report is accepted.

Next, the report of the Delegates to the A. M. A.

Chairman Stambaugh: This report is probably one of Dr. Wagner's usually good reports, but it could be read by title, Dr. Gehret tells me.

Report of the Delegate to the A. M. A.

Dr. James Beebe, our regular delegate, felt that it would tax his physical condition too much to attempt a trip to Los Angeles. It was, therefore, again my privilege to represent our Society, as its alternate delegate, at the Fifth Annual Clinical Session of the American Medical Association held there December 4-7, 1951.

The attendance of 4419 physicians exceeded that of any of the previous Clinical Sessions. Swelling this attendance were more than 4600 guests, including residents, interns, medical students, nurses, and technicians. The scientific and technical exhibitors were pleased with the attendance and interest shown by those who attended the meeting.

Among the actions taken by the Board of Trustees was an appropriation of another half million dollars to the American Medical Education Foundation, which had been raising funds within the medical profession during the last year for the Nation's Medical Schools.

Among the visitors to the House of Delegates was Donald R. Wilson, Clarksburg, W. Va., National Commander of the American Legion. In a very inspiring address he paid tribute to the American physician and his determination to provide basic answers to the problem of medical care facing the people of this country.

In recognition of nearly fifty years of exceptional service to his patients, Dr. A. C. Yoder, of Goshen, Ind., was awarded the fifth annual general practitioner's gold medal and named "general practitioner of the year."

This was probably the last time that I shall ever serve as the Delegate from this Society to the A. M. A. meetings. May I take this opportunity to express to you my deep appreciation of the honor and pleasure of serving a number of times through the years in that capacity.

Respectfully submitted,
C. E. Wagner, *Delegate*

The report was accepted by title.

Dr. Fitchett: I recommend that my report be read by title. I might say it has been one theory that by going back year after year we would attain some degree of national recognition, which is a good idea. The other theory that occurred to me in attending this session in Chicago last June is that it is now a double-barrelled affair. We go in June and then again in December, and it is my feeling that it is a golden opportunity for our members to learn some of the problems that face the A. M. A. and to learn how these problems are solved, as well as to meet and enjoy the companionship of the members that are doing this work. It was therefore my feeling that two years—which would be four sessions, would be long enough for any one member to have that privilege and opportunity, and that it should be something that is rotated through the Society, pretty frequently, that I don't know as it is necessary to have any action on that, but when my to years are over, that would be my own recommendation, that I not be appointed again, and that some other member be given the opportunity to enjoy the same opportunities I have had in the past, because, as I say, it is definitely an opportunity and a privilege to go there and see how they work, how the committees function, and so on, and to meet these men.

Report of the Delegate to the A. M. A.

The 101st Annual Session of the A. M. A. was held in Chicago June 9-13, 1952.

The first matter of importance was the selection of Dr. Paul D. White, Boston, as the recipient of the Distinguished Service Award of the A. M. A. for 1952.

The Speaker, Dr. F. F. Borzell, next presented his address, which was an unusual one, in that it revealed an analysis of the 101st House of Delegates that should be of interest to all members of the Association. There are 188 members of the House elected by the Constituant State and Territorial Associations and the Sections of the Scientific Assembly, and those appointed from the government services. Fifty-three per cent are from 40-58 years of age. Thirty-six per cent are from 60-69. The average age is fifty-eight years. Fourteen delegates were serving their first term and eighteen had served only one year previously. The average length of service as a delegate was five and one-half years. Twenty-one per cent practiced internal medicine exclusively, fourteen per cent practiced surgery, ten per cent were general practitioners, twelve members were urologists, five were pediatricians, etc. Practically the entire field of medical practice is represented. The figures, Dr. Borzell pointed out, indicate that there is a healthy turnover of membership, and at the same time a sound, experienced membership maintained.

Dr. John W. Cline, the retiring president, gave a fine address in which he stated that "Medicine has become a significant force in American life." It is "stronger, more unified and better able to prevent the destruction of the high standards of medical care inevitable in socialistic schemes."

During his address, Dr. Cline detailed the events leading up to the formation of President Truman's Commission on the Health Needs of the Nation and the appointment, by the President, of Dr. Paul Magnuson as its chairman. He detailed information available that indicated that the Commission was a political expediency to remove the question of Socialized Medicine becoming a campaign issue during an election year. In view of the magnitude of the task confronting the Commission, the limited facilities and the short period of its operation, characterized by Dr. Magnuson himself as "too big a job for one year" Dr. Cline felt that the report would have to be scrutinized with great care.

Dr. Cline further detailed criticism of the A. M. A. by Dr. Magnuson, that had appeared in the press and further stated that he felt the time had come when we can no longer ignore that variety of attack on the A. M. A. and American Medicine.

At the conclusion of his address a resolution was introduced disapproving of Dr. Magnuson's attacks and expressing a lack of confidence in the Commission as a politically inspired agency of the Administration. This resolution was referred to the Reference Committee on Legislation and Public Relations. Their meeting, which considered this resolution, was well attended and was one of the highlights of the convention.

It developed, during the hearing, that two former A. M. A. presidents had declined the chairmanship before Magnuson accepted it, and that at least two of the first appointments as members were avowed advocates of socialized medicine. In another instance, one physician stated that after appearing all day at a panel discussion before the Commission he received a summary of the testimony. After reading it, he felt that he might just as well have stayed home as the testimony was a summation of that expressed in several Federal publications, rather than his own.

Chairman Magnuson in his testimony before the Reference Committee, denied that he would give President Truman a preliminary report in September as it would be impossible to arrive at any conclusion by that time. He was at a loss to explain a new release from his Washington office to the effect that he would issue such a report. At the conclusion of his testimony before the Reference Committee he stated that, in his opinion, the whole opposition to the Commission was kindled by Whiteker and Baxter in an effort to keep themselves employed.

The House adopted the resolution of the Reference Committee in approving the Board of Trustees in its stand that the Commission was politically inspired. It adopted a policy reserving any comment or criticism of the work of the Commission until after its report is turned in to the President and made public.

During the session a gift of $10,000 from the Woman's Auxiliary to the American Medical Education Foundation was announced, as well as a gift of $25,000 from the Chicago Medical Society. Pennsylvania announced a $25 voluntary assessment of each member and Illinois a $20 assessment on each member beginning next year. A goal of $2,000,000 for the year has been set.

Final changes in the Constitution and By-Laws were approved limiting the types of membership in the A. M. A. The Fellowship type of membership is now dropped.

The House approved the action that the Board of Trustees took in regards to HR 7800 (a bill to amend the Social Security Act). This action had consisted of a telegram to all members of the House of Representatives "urging deletion of Section 3 from HR 7800" and was taken when the bill was first introduced as an emergency measure.

After much discussion the House of Delegates adopted the following resolution "That the A. M. A. condemns the breach of faith by this Administration with those who would benefit from this bill, in a flagrant attempt to railroad through a provision to aid in the socialization of medicine, which could not possibly be adopted if considered openly and fairly; and

"That the A. M. A. urges that Congress refer this bill to the Committee where it should be subject to the ordinary democratic processes of legislation."

Dr. Edward J. McCormack, of Toledo, Ohio, was elected President-elect and Atlantic City was chosen as the meeting place of the Annual Session in 1955, the Clinical Session to be held in Boston.

Respectfully submitted.

Lawrence L. Fitchett, *Delegate*

The report was accepted by title.

Chairman Stambaugh: Next, the Representative to the Delaware Academy of Medicine.

Report of the Delaware Academy of Medicine

The Delaware Academy of Medicine recorded another very successful year in its service to the members of the medical profession as well as to the whole community.

During that year the Academy presented a Symposium on Obstetrics and Office Gynecology. The Symposium was given in six sessions and was opened also to the members of the nursing profession. The response to the Symposium was so great that it was decided to hold identical meetings on Wednesdays and Thursdays. The papers presented were on an excellent scientific level and the Symposium was highly commented upon by those attending.

The library in order to improve its book section, added during the year over 100 new books, and several new periodicals were added to the library collection.

The building has been used during the year as a meeting place by local medical and allied organizations.

Respectfully submitted,
William O. LaMotte, *Chairman*

The report was accepted by title.

President Stambaugh: Next, the Committee on Nominations. Dr. Lawrence.

Dr. Lawrence: Your Nominating Committee consisting of Dr. R. L. Klingel, J. S. McDaniel, Sr., and myself did meet and we submit the following candidates for your consideration for the various offices and the Standing Committees:

Report of Committee on Nominations for 1953

Vice-President: Leslie M. Dobson, Milford.

Secretary: Andrew M. Gehret, Wilmington.

Treasurer: Joseph M. Messick, Wilmington.

Rep. to D. A. M.: William O. LaMotte, Sr., Wilmington.

STANDING COMMITTEES

Scientific Work: Benjamin F. Burton, Dover; James Beebe, Jr., Lewes; Andrew M. Gehret, Wilmington.

Medical Education: Alfred R. Shands, Wilmington; Roscoe W. Elliott, Laurel; Hewitt W. Smith, Harrington.

Publication: W. Edwin Bird, Wilmington; M. A. Tarumianz, Farnhurst; A. M. Gehret, Wilmington.

Public Laws: Joseph S. McDaniel, Sr., Dover; J. Leland Fox, Seaford; Emil R. Mayerberg, Wilmington; Roger Murray, Wilmington; I. J. MacCollum, Wyoming.

Budget: Joseph M. Messick, Wilmington; Charles Levy, Wilmington; M. A. Tarumianz, Farnhurst; William T. Chipman, Harrington; Charles M. Moyer, Laurel.

State Board Medical Examiners: Gerald A. Beatty, Wilmington; J. Richard Durham, Wilmington; Lewis B. Flinn, Wilmington; James E. Marvil, Laurel; James Beebe, Jr., Lewes; Henry V. Wilson, Dover; Robert R. Layton, Jr., Dover; Joseph S. McDaniel, Jr., Dover; Millard F. Squires, Wilmington; Ervin L. Stambaugh, Lewes.

Terms expiring March 1, 1953: Gerald A. Beatty, Wilmington; James E. Marvil, Laurel; Henry V. P. Wilson, Dover.

Respectfully submitted,
Charles T. Lawrence, *Chairman*

President Stambaugh: Are there any other nominations?

Dr. Mayerberg: I move the acceptance of the report of the Nominating Committee.

The motion was seconded by several and carried.

President Stambaugh: If there are no further nominations, then, the nominations are closed and the Secretary will cast the ballot.

Secretary Gehret: The ballot is cast.

Chairman Stambaugh: So ordered.

We have another important item here that I wanted to discharge. IN MEMORIAM: Drs. J. William Urie, of Wilmington, who died April 17, 1952 and Dr. Theodore Schwedenberg, of Seaford, who died June 24, 1952, and Dr. Aubrey C. Smoot, who died August 16, 1952. The Chair asks for a moment of silence — may we rise?

IN MEMORIAM: A moment of silence was observed as the members of the House arose.

Dr. Mayerberg: Mr. Chairman, was Dr. Hudiburg appointed by you on a special committee to raise special funds for the A. M. A.?

President Stambaugh: Next is the report of the Committee on American Medical Education Foundation.

Report of Committee on A. M. E. F.

Dr. Hudiburg: One thing I would like to say is that I would like for the House of Delegates to go on record as approving the program that we are trying to carry through, especially as there is no official approval of what our committee is trying to do.

I have had a Resolution prepared, as follows:

Whereas: The American Medical Association, through its House of Delegates at the Cleveland Meeting in December 1950, established the American Medical Education Foundation, for the purpose of soliciting subscriptions from the Medical Profession to aid in the continuation of Medical Education without government subsidy; and

Whereas. said Foundation was put in operation in 1951, and is to be an annual feature of the American Medical Association endeavors; and

Whereas. President Stambaugh in February of 1952 appointed a Delaware Committee for the A. M. E. F. with Dr. C. L. Hudiburg as Chairman, which Committee is now actively engaged in carrying out its purposes; now therefore

Be It Resolved: that the Medical Society of Delaware, in Annual Session convened does approve the objectives and procedures of said Delaware Committee and urges upon all its members their active and generous support.

Several seconded the motion to approve the resolution.

President Stambaugh: It has been regularly moved and seconded that the resolution as read be approved.

The motion was put to a vote and carried.

Dr. Hudiburg: That gives us official authority to work. I might say, your committee has done a lot of work and a lot more remains to be done. I wish all would notice the exhibit we have and there is enough information on that so all can become familiar with the workings of the committee.

Some expenses have been incurred all of which I paid, and don't ask for reimbursement. However, in 1953 I do have some proposed expenses and if the Society should see fit to help defray those expenses I would be willing to accept. The A. M. A. recommends that not more than one-half of one per cent of goal be allowed for expenses. The goal for Delaware is supposed to be around $50,000.

Dr. McGee: I move approval of this in the budget.

Dr. Bird: It is already in there.

New Business

President Stambaugh: New Business, now.

Dr. Gehret has a couple of gentlemen with us. I am going to limit their time.

Two members of the Continental Casualty Company of Philadelphia spoke briefly, as representatives of J. A. Montgomery, Incorporated, of Wilmington, relative to the feasibility of extending the health and accident program to the State Society as a whole.

DR. WASHBURN: Mr. President, would it be feasible to have this matter referred to a committee for study and recommendation?

DR. MAYERBERG: The question is so large I don't believe it would be possible to resolve it this evening. I move that these gentlemen be thanked for appearing before us and assure them we will bring it before the Medical Society at an early date. We can't do anything here tonight. There is nobody here from New Castle County. We can't tell them what to do.

PRESIDENT STAMBAUGH: It can be referred to the Committee on Medical Economics—Dr. Dobson's committee will be glad to speak to you gentlemen. If there is no objection, the matter will take that course.

SECRETARY GEHRET: There is one other matter which was approved by the Council and that is requesting the State Legislature to write or to draw up a State Anatomical Act. I am presenting it to the House of Delegates. You probably have read and heard a lot about a Medical School for Delaware. This has nothing to do with a Medical School. It might in the future, I don't know. But it is more for the proper training and development of a residency program in the various hospitals in the state, so that there might be legally some opportunities for dissection on human cadavers. (Reading resolution)

DR. TARUMIANZ: I so move you.

PRESIDENT STAMBAUGH: It has been regularly moved and seconded that the resolution be adopted, that the Legislature be approached on the subject of an anatomical bill. At least in the Council we meant to refer that to the Committee on Public Laws. I did want to get that in. Do I hear a second to the adoption of that resolution?

Put to a vote and carried, and resolution accepted.

PRESIDENT STAMBAUGH: The last is the By-Law amendment that was not completed last year. There was a By-Law concerning the excuse from dues and assessments of men that retire from the practice of medicine. The committee was appointed the night of the meeting which was to report later that evening, but did not — nor did they present a report the next day, so it has been allowed to stay in the air for a year.

SECRETARY GEHRET: As presented at that time and carried over until now, the By-Law reads as follows:

> Page 10, New Amendment to Article 3, Section 6, Dues and Assessments.
>
> Active members of this Society who retire from practice before the age of seventy and who derive no part of their income from the clinical practice of medicine shall be excused from the payment of annual dues or special assessments of this Society, provided they are similarly excused from the payment of dues and assessments of their component county society, and provided further that they shall file with the Secretary of this Society, on a form to be provided by said Secretary, an affidavit to the effect.

DR. BIRD: I might explain that the discussion last year hinged upon the striking out of the word "clinical". The suggestion was to delete the word "clinical" and to delete all of the last phrase or clause, "and provided further that they shall file with the Secretary of this Society, on a form to be provided by said Secretary, an affidavit to the effect."

The amendment as proposed would then read as follows:

> Page 10, New Amendment to Article 3, Section 6, Dues and Assessments:
>
> Active members of this Society who retire from practice before the age of seventy and who derive no part of their income from the practice of medicine shall be excused from the payment of annual dues or special assessments of this Society, provided they are similarly excused from the payment of dues and assessments of their component county society.

DR. WASHBURN: I move the adoption of the amendment as just read.

Several seconded the motion which was then unanimously carried.

PRESIDENT STAMBAUGH: How about the approval of the Scientific Program?

DR. WASHBURN: I move its approval as printed. Seconded and carried.

PRESIDENT STAMBAUGH: Selection of a meeting place for 1953.

DR. BIRD: It goes to New Castle County.

DR. WASHBURN: I move that Wilmington be the place of the next Annual Meeting.

The motion was seconded and carried.

The House of Delegates meeting thereupon adjourned at 11:57 p. m. o'clock.

Ten years ago, a chest x-ray for the apparently well person was relatively uncommon. In 1950, however, some 15 million people in the United States had small-film radiographic examinations of their chests in tuberculosis screening programs. Since the development of the photo-fluorograph in the late 1930's, and its refinements in the 1940's, the use of miniature x-ray equipment by local official and voluntary health agencies has grown enormously, and there is scarcely a state or county of the United States where case finding by this means has not been done, either in community-wide surveys or in segmental surveys of special population groups. Robert J. Anderson, M.D., Medical Papers of the Annual Meeting of the Canadian Tuberculosis Association, May, 1951.

There are certain diseases which notoriously increase the incidence of tuberculosis, diabetes mellitus and stenosis of the pulmonary valve of the heart for instance. Whether diabetes acts by reducing the general resistance or whether the added sugar in the blood favors the growth of tubercle bacilli is a moot question. Stenosis of the pulmonary valve presumably acts by reducing the blood supply to the lungs and reducing local resistance. George Blumer, M. D., Conn. State Med. J., May, 1952.

+ Editorials +

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Vol. 24 December, 1952 No. 12

The Way Not To Do It

This issue contains the transactions of the House of Delegates. Even a cursory perusal shows that the reports are too many, some are too lengthy, many had to be "read by title," and the discussions occasionally were too windy. The result: a tired House hurrying along to beat the midnight hour. The remedy: discharge a few committees that function poorly or not at all; eliminate all statistics that are published elsewhere, especially by the State Board of Health; substitute short, snappy reports and eliminate "reading by title;" and reduce discussions to only pertinent remarks. This, it seems to us, is the way to transact our business in the future.

Prize For Paper By Interns

The American Diabetes Association, through the generosity of the St. Louis Diabetes Association, offers a $250.00 prize to *medical students* and *interns* for a paper on any subject relating to diabetes—a report of original studies, a biographical or historical note, a case report with suitable comment, or a review of the literature.

Dr. Paul Langerhans made his studies of the pancreas, describing the islets that bear his name, while an undergraduate student in Berlin in 1869; and Dr. Charles H. Best, while a graduate student at Toronto, was co-discoverer of insulin in 1922.

Manuscripts must be submitted on or before April 1, 1953 to the Editorial Offices of *Diabetes*, the Journal of the American Diabetes Association, 11 West 42nd Street, New York 36, New York.

Milestone No. 37

With this issue your humble scribe completes his thirty-seventh year as editor of *The Journal*. Since, June, 1952 he has been the senior editor in the state medical journal group. While there have been some heartaches and a few more headaches in these thirty-seven years, the task is one we have, on the whole, enjoyed, thanks to the cooperation of our members and our friends. May it continue—and thanks in advance.

The Journal extends to all our members, friends, readers, and advertisers, the Very Best Wishes for a

MERRY CHRISTMAS

and a

HAPPY NEW YEAR

Tuberculosis of the lungs may be present without causing any symptoms. The disease may pass through a complete cycle of activity, even to healing, without the patient's actual knowledge of such. The symptoms may manifest themselves insidiously or appear abruptly as an acute pneumonia. Tuberculosis may manifest itself first in some other organ without any clinical indication of lung involvement. Tuberculosis of the lungs may assume so many different clinical forms that it must be considered in the differential diagnosis of practically every lung disease. James M. Blake, M. D., N.Y.S. J. of Med., February 1, 1952.

The control of diseases due to an insanitary environment can, obviously, often be accomplished in sudden and dramatic fashion. No such easy victories can be achieved with the contact-borne diseases, since man is much less susceptible to control than his surroundings. Such maladies as tuberculosis and syphilis have been fought almost as effectively but at a slower pace. C.-E. A. Winslow, The Cost of Sickness and the Price of Health, WHO Monograph Series, No. 7, 1951.

BOOK REVIEWS

Delaware Social Service Directory — 1952. Pp. 64. Paper. Prices, $1.50 and $2.50. Wilmington: Welfare Council of Delaware, Incorporated, 1952.

This is the first edition of this Directory since 1949. The book now contains over 280 listings of Delaware's health, welfare, and recreational services and organizations. Each listing covers history and background, objectives, methods of operation and services rendered. The new edition is more comprehensive, more informative, and up-to-date. Care has been taken in its preparation to assure that it contains full information about Delaware's welfare resources. Additional subject headings and a new alphabetical index of agencies and services make the directory easier to use for quick reference. Purchase of the book entitles the purchaser to a correction service, to be mailed at proper intervals.

Based on extensive use of the 1949 edition, this reviewer feels that this new directory should be in the hands of every physician in Delaware. Furthermore, he strongly recommends the purchase of the higher priced plastic ring binding, which lies flat on the desk while in use.

Radium Therapy, Its Physical Aspects. By C. W. Wilson, Ph. D., Physicist, Westminster Hospital, London. Pp. 224, with illustrations. Cloth. Price, $6.00. Sherwood Press, 1951. Washington, 13, D. C.

An outstanding monograph and probably the only one of its kind in the United States. Devoted almost exclusively to the physical aspects of radium therapy by a physicist with extensive practical experience in this form of therapy, at Westminster Hospital, London, England. For those interested or actively engaged in the use of radium as a therapeutic agent, the book can be easily read as a text and extensively utilized as a reference. No major omissions in subject matter have been detected. The book lends additional evidence of England's superiority in the field of radium therapy.

Brain Surgeon. The Autobiography of Dr. William Sharpe. Pp. 271. Cloth. Price, $3.75. New York. Viking Press, 1952.

Dr. William Sharpe is one of the great brain specialists of our time. He proved that brain surgery could be as successful as surgery in any other part of the body.

He relates with absorbing interest his family background, his boyhood and student days at Harvard, his adventures in China and his personal experiences with his teachers and associates.

One of Dr. Sharpe's great contributions has been in the field of cerebral palsy, emphasizing prevention of obstetrical injuries to the baby and early spinal drainage in injured babies.

Dr. Sharpe worked under Dr. Harvey Cushing of the Johns Hopkins Hospital and Dr. John A. Wyeth of the New York Polyclinic Medical School and Hospital.

This book reads like a fast-moving fascinating story with the hero getting in and out of personal and scientific difficulties with ease and cleverness. Very interesting.

Physician's Handbook. By Marcus A. Krupp, M.D., Norman J. Sweet, M.D., Ernest Jawets, M.D., Charles D. Armstrong, M.D. Seventh Edition. Pp. 380. Paper. Price, $2.50. Los Altos, California. University Medical Publishers, 1952.

This handbook is indeed a storehouse of useful information which the busy physician or hospital resident needs in every-day practice. Medical students will also find it an excellent guide in reviewing for examinations.

The book covers methods of examination of the various systems, diets and vitamins, laboratory examinations, surgery, infant feeding, functional and other tests, fluid and electrolyte balance, and information on many other difficult medical problems.

The book also contains staining methods, composition of solutions and reagents, elements and atomic weights, and other informative tables. The many illustrations add to the ease of understanding the procedures described.

Cortone—A Handbook of Therapy. Cloth. Pp. 129. Rahway, N. J. Merck and Company, 1952.

This little book gives a review of case histories of patients treated with cortone and hydrocortone acetate. The various conditions in which these hormones have been found useful are outlined.

The hazards and dangers which may be encountered in the indiscriminate use of these drugs are mentioned. The book properly emphasizes that the hormones are adjuncts, and that all of the accepted methods of treating the various conditions should be used.

This book is available gratis to physicians and pharmacists upon request.

A 40 Year Campaign Against Tuberculosis. Cloth. Pp. 115. New York: Metropolitan Life Insurance Company, 1952.

The book describes the tuberculosis program initiated by the Metropolitan Life Insurance Company in 1909, at which time a general nursing service and a tuberculosis sanatorium were established for the care of their employees.

The interest of the company in public health improvements in controlling tuberculosis led to the arousing of the public interest in other health problems.

The contributions of the company through funds and publicity resulted in better understanding of tuberculosis and it's management. The reduction in morbidity and mortality are outlined.

This report demonstrates how effective the efforts of a private business organization can supplement those of the medical profession, of government, and of voluntary welfare organizations, where there is a bond of common interest. It points to ever greater possibilities in the future for the joint action of business, government, and philanthropy for the public welfare.

Anyone interested in tuberculosis will find this a very informative book.

Research In Endocrinology. By August A. Werner, M.D., and Associates, Pp. 285. Cloth. St. Louis, von Hoffmann Press, Inc., 1952.

This book was edited by A. R. Schmidt, city editor of Belleville Daily Advocate of Belleville, Illinois. Mr. Schmidt was a friend, patient, and a frequent visitor to the office of Dr. Werner for several years and learned of Dr. Werner's medical discoveries and contributions to scientific medicine.

The author outlines his medical career and publications. He is noted in the field of endocrinology especially that which deals with the genital organs.

Living With Cancer. By Edna Kaehele. Pp. 160. Cloth. Price, $2.00. Garden City, New York. Doubleday and Company, 1952.

This small book deals with the experiences of the author who suffers with cancer of the abdomen. She relates her story of how physicians gave her "six months to live" and how she made an adjustment to her condition, and is still alive after several years of treatment, even though her cancer is not cured nor "arrested".

This encouraging story should be read by patients with any form of chronic or "incurable disease." The author shows how a person can adjust himself and enjoy life by deciding "to outgrow cancer" rather than sit back and deteriorate by hopelessness.

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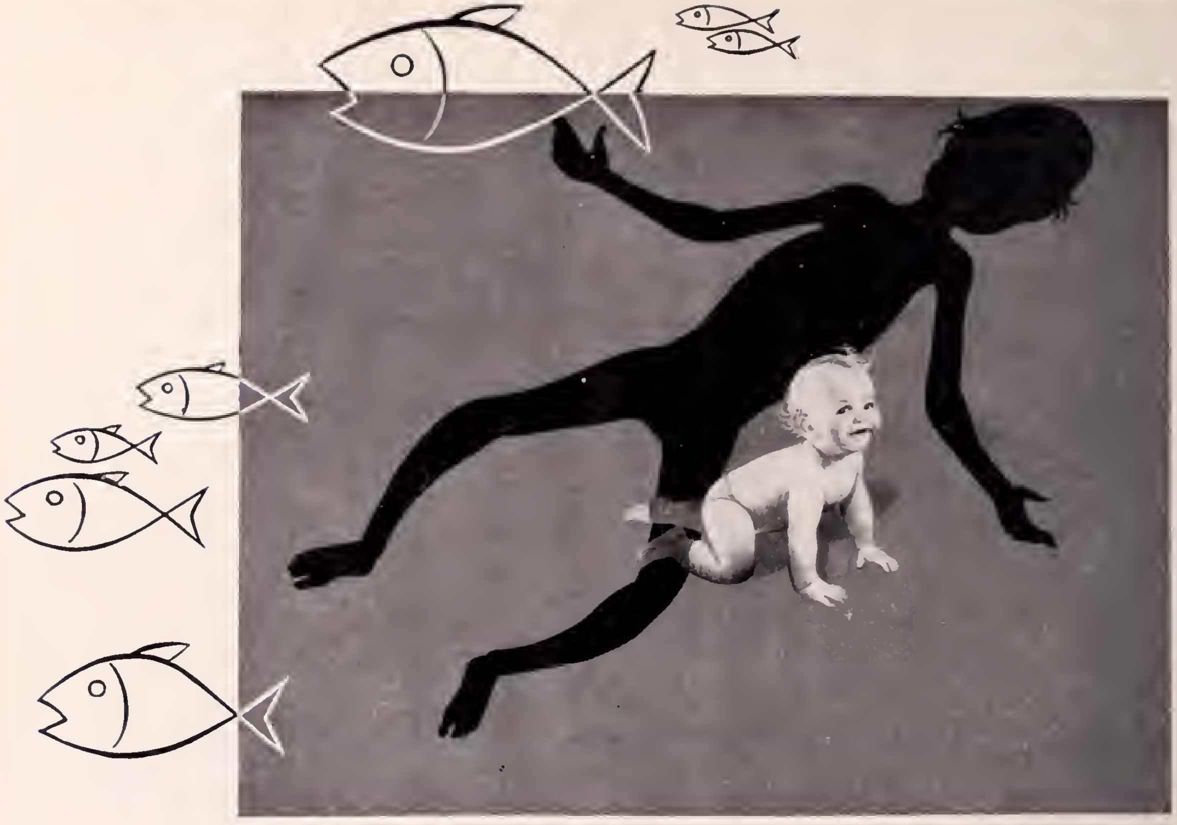

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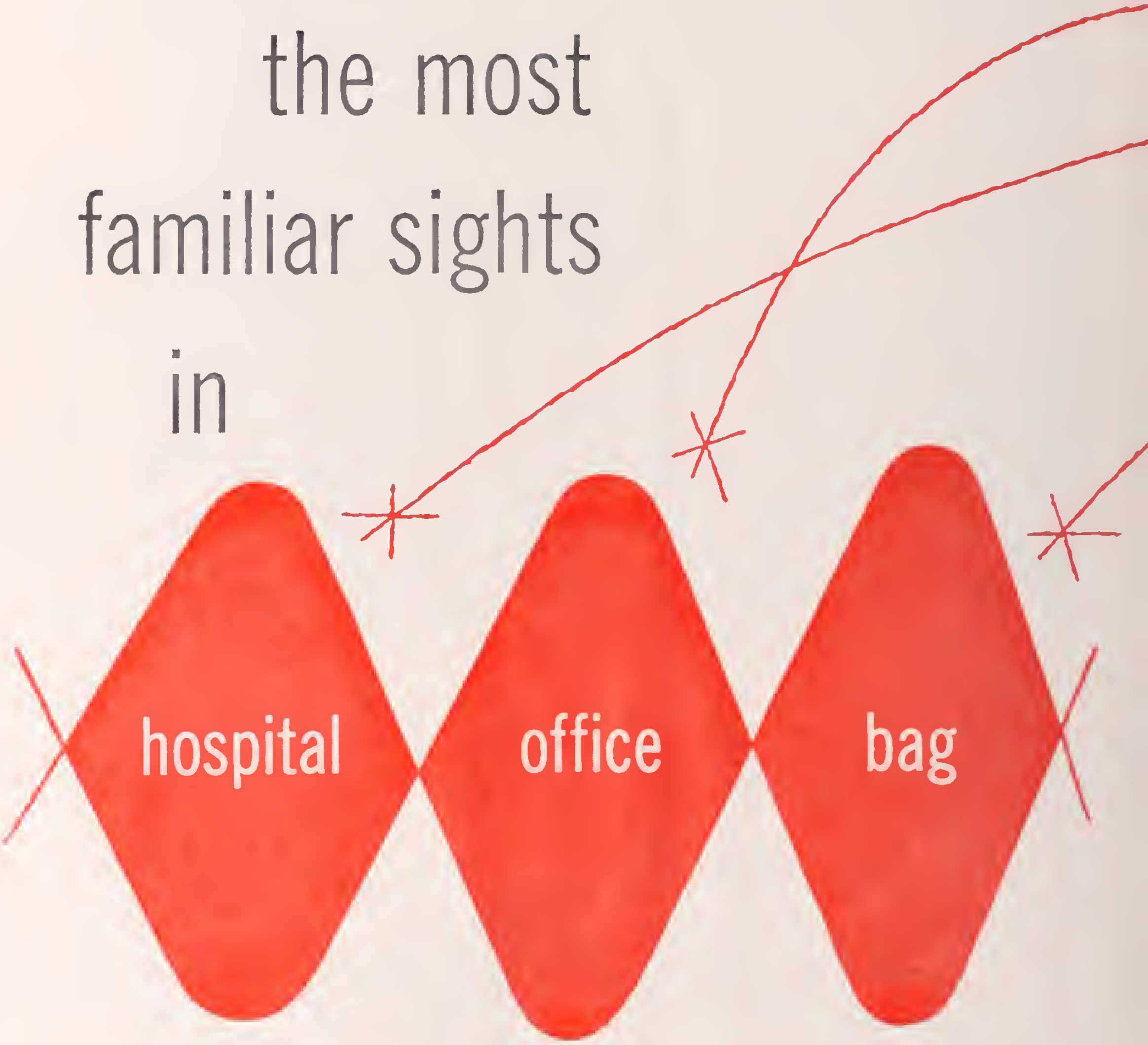

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